AMERICAN FRUIT GROWER MAGAZINE

March
1922

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Edited by Samuel Adams

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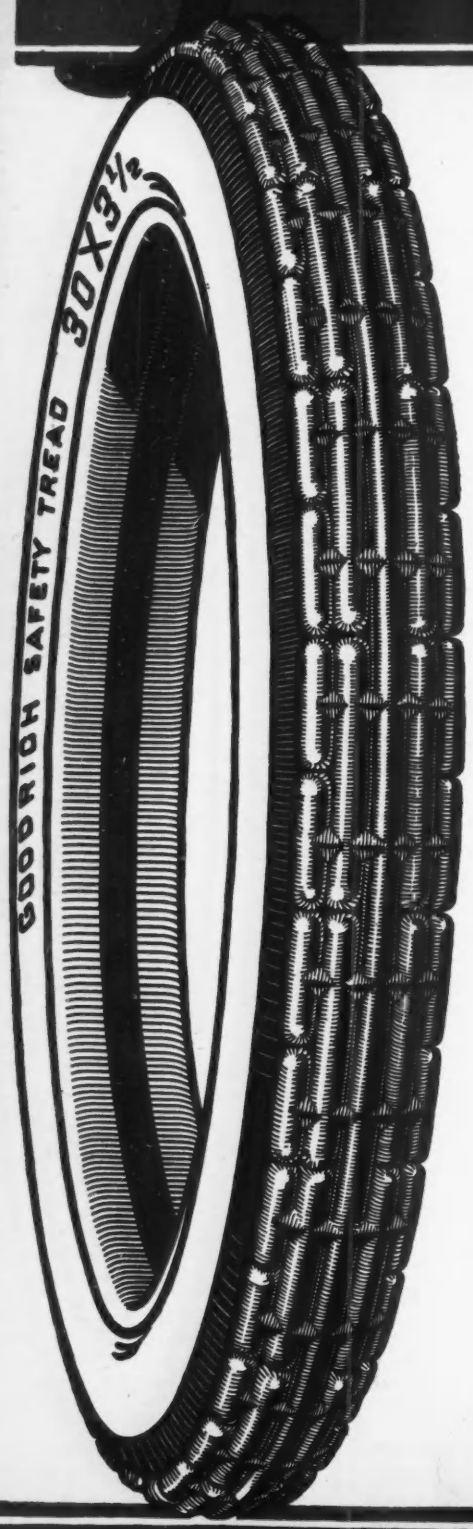

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Advertising Rates
$1.75 an Agate Line Flat, or $24.50 per Inch
Classified, 15c a Word

AMERICAN FRUIT GROWER MAGAZINE
(Title Registered in United States Patent Office.)
The National Fruit Magazine of America
PUBLISHED MONTHLY BY
AMERICAN FRUIT GROWER COMPANY, Inc., State-Lake Bldg., Chicago, Ill.
Entered as second-class matter Oct. 17, 1917, at the Post Office at Chicago, Ill., under the Act of March 3, 1879

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Vol. XLII MARCH, 1922 No. 3

The Planting and Care of Strawberries

Write Us About Your Small Fruit Problems—Our Editors Are Anxious to Help You

By O. A. D. Baldwin

EVERY year an increasing number of people are growing strawberries, both for commercial and home use purposes. With this increase in planting, more interest and attention is being given to the best methods of "The Planting and Care of Strawberries."

Five of the most important factors in successful strawberry growing are: Selection of general location and particular site, preparation of the soil, planting, care, cultivation and renewal of the fruiting bed.

The selection of location and site is of particular importance to the commercial grower. It is to his advantage to locate in a small fruit section, so that he can get the benefits of organized buying of supplies and selling of his crop. More than this, he will have the helpful stimulus of working with others engaged in the same business and having a mutual interest. The particular site in this fruit section should be selected with regard to suitability of soil, distance from shipping point, drainage and exposure. A good, rich, medium sandy loam of moderate depth, underlaid with a clay subsoil, makes the best strawberry land for commercial purposes. Such a soil will give good surface drainage and still retain enough moisture to carry the plants through dry seasons. Exposure of the site is not of great importance, although a southern slope will make the ripening date six to eight days earlier.

Trucks Lessen Distance

With the present wide use of trucks the distance to shipping point or city market is not as important as formerly.

The single most important factor in successful strawberry production is the preparation of the soil. Strawberry plants are intensive, rapid-growing plants. They are on the land only three or four years at the most, thus giving no time for building up the soil or changing it to suit their needs after the field is planted, and making it necessary to give careful attention to soil preparation before setting.

Although it has been mentioned that a rich, sandy loam is the best commercial strawberry land, this does not mean that such a soil is necessary for good production. Fine strawberries can be grown on a wider range of soils than any other fruit crops.

Soil Conditions Important

The soil should be loose and open, full of humus, rich in readily-available nitrogen, and slightly acid. Where possible, it is an excellent practice to grow a cultivated crop on the intended strawberry field for two seasons previous to planting—for example, corn followed by potatoes.

September first, before planting the corn, a green manure crop of thirty-six pounds of oats and twelve pounds of hairy vetch per acre, to furnish humus and nitrogen, is recommended. Corn is a rough feeder and will reduce the green material to fine humus, readily available as plant food. After cutting the corn, an application of stable manure at the rate of eight to ten tons per acre and plowed under in the spring will further increase the humus supply to insure a mellow, well-drained, well-aerated soil, and also supply more plant foods. Stable manure has proven to be the best all-round fertilizer for strawberry plants, furnishing both organic material and a good supply of essential plant food elements.

Following the potato crop, fall plowing is advisable, to allow the soil to settle and give a firm bed for setting the plants, at the same time killing any insects wintering in the soil. In the spring disking and harrowing is all the preparation the land will need.

Select Plants with Care

We now come to the plants and actual planting. Be sure that your plants are true to name, free from diseases and insects, thrifty, vigorous and carefully packed. There are many reliable nurserymen throughout the country, who make it their business to put out good stock having these qualities. Instruct the nurserymen to ship so that the plants will arrive at the time your ground is ready for planting. If they come a day or two early, unpack carefully, to keep varieties separate, open each bunch and spread the plants out in a shallow trench, cover the roots with soil and water them. The plants will keep in this way without injury for four or five days.

In commercial plantings rows are usually set three feet eight inches apart, with the plants fourteen to eighteen inches apart in the row and the new runners trained to a narrow, solid row—this requires about seven thousand plants to the acre. For home gardens the rows may be set closer together—two or three feet, with plants spaced as above. Garden plants are also often trained to the hill system, with plants set about twelve inches apart in the row and all runners cut off so that the original plant forms the entire hill. This system will produce fewer berries of larger size.

How to Set Plants

A spade is a convenient tool for making holes. Put it in the ground six or eight inches and pull towards you, remove the spade and you have a "V"-shaped opening. Place the plant and close the hole with one foot, firming in well by stepping on both sides of the plant.

In setting be sure that the crown is not covered, as to do so will kill the plant. Set at the same depth at which the plant grew, with the crown level with the surface. Plants set too deeply will be washed over with mud, and those set too shallow will dry out. When planting it is a good practice to wet the roots in a pail of water just before setting, unless the soil is full of moisture. This will save the plants' sudden wilting and insure a good start.

In selecting varieties, pollen fertilization, adaptability and season of ripening must be considered. Most widely-grown varieties are staminate, that is, they are capable of fertilizing their own flowers and need no other variety set with them. Other varieties are pistillate, their flowers producing no pollen, and these sorts need a staminate variety set in every third or fourth row to produce good crops of fruit. Nursery catalogues usually show whether a variety is staminate or pistillate.

Rules for First Season

With good soil preparations and proper setting, continuous and thorough cultivation and care must be given during the first growing season to insure a good crop. The blossoms should be picked off during the early summer in order that all possible vigor may go into the new roots and runners to grow a good fruiting row for future crops.

The field should be hoed as often as is necessary to keep the soil crust broken and the weeds down. A little earth thrown over the runners will aid them in setting and give a better stand of plants.

Cultivation should be continuous throughout the growing season and early fall, keeping the soil finely broken up to prevent loss of moisture and at the same time bring it up to the surface within reach of the plant roots. As the plants grow, shallower cultivation is given, so as not to disturb the root growth. If the operation in each row is always in the same direction, newly-set plants will not be torn up.

At the end of the fruiting season comes the question of renewal of the bed for the next season's crop. A very successful practice is to first mow, rake off and burn the old vines. Following this, turn a shallow furrow away from each side of the row, using a small plow, leaving the row six to eight inches wide. Then go over the row with a hoe, cutting out plants so that small blocks of the newer plants are left eight to ten inches apart.

Finally, cultivate down the soil that has been turned into the middle of the row. The mowing and burning will destroy any leaf diseases and insects that may be in the leaves, and the operations will provide room and fresh soil for the growth of new runners necessary to give a good yield the following season. A light layer of stable manure put on after the ground freezes, as a winter mulch, will greatly benefit plant and fruit production.

Diseases or Pests

The strawberry plant has very few serious diseases or insect pests, while grubs and cut worms are killed by fall plowing previous to setting the plants. Because of these pests it is not advisable to plant on a newly-turned sod, as such land often harbors them.

The leaf roller may be controlled by two or three sprayings about one week apart with arsenic of lead, two pounds of paste to fifty gallons of water, applied as early in the summer as the insects are noticed and before the leaves are rolled.

Strawberry leaf spot is the only serious disease and may be controlled by one or two sprayings of bordeaux mixture. This spray should not be applied less than two weeks before picking, as it may injure the fruit.

Leaf spot, when present, is usually worse in midsummer, after the crop is off, and prevents a healthy growth of plants for the coming season. A spraying at this time will check this injury.

The strawberry is a fruit that does not require any more constant or particular care than any other to bring it to its highest quality and value, but with ordinary attention and care given, no other fruit will respond more readily or will more surely repay the grower in both pleasure and profit.

Note the Large, Healthy Plants and the Straw Mulch

How To Prune Fruit Trees and Tools To Use

The Illustration Is a Guide That Will be a Great Help to You

By T. Sheward

FRUIT trees are pruned to increase the size and appearance of the fruit, to give the trees a symmetrical form and to remove any cross branches that tend to shut out light and air. By judiciously pruning a tree can be made to assume any form, as with trained trees such as cordians, espaliers, etc.

Young trees of apples, pears, plums, cherries, etc., are pruned hard in the first few years after planting, cutting back the young wood to two or three buds each season, till enough branches are formed to keep the tree low-headed, and to make the gathering of the fruit possible later on. This is especially necessary in tall growing trees such as the sweet cherry, which, if not pruned hard when young, would grow to 30 feet as it reaches maturity, making the gathering of the fruit almost impossible.

Pruning for Fruit

When the early pruning has given the tree its framework branches, the pruning for fruit commences. On apples, pears, plums and filberts, summer pruning or pinching should be practiced when possible, and any branches that are not needed for shaping the tree should be pinched back in summer to six leaves, and then cut back to two buds in winter pruning to form fruit spurs.

In the diagram is shown an old apple tree and the general system of pruning apples, pears, plums, etc. The first thing to do in pruning this is to cut out any cross branches (B, B, B), cutting close to the main branch, as at (D), and not leaving any stubs (C, C) to decay.

When the branch is cut away with the saw (V), go over the cut with a sharp knife and smooth over, so that the cut will heal over quickly. Then, with the long-handled pruners (B), head-in the new wood to two-thirds its length, keeping in mind the shape of the tree when heading-in, see (X,X,X,X,X in diagram).

Observe Diagram Closely

In most cases the cut is made to an outside bud, as shown at (A,A,A—), to keep the branches growing in an outward direction. In the diagram at (I) is shown the young wood of an apple. From (I) to (J) is one year's growth; the buds marked (H,H,H, H,H) are on the two-year-old wood. These grow larger as the branch grows older and on three- and four-year-old wood look something like (L). (K) shows how the spur (L) looks in summer.

By heading-in the new wood each year all the fruit buds develop. When no heading-in is practiced, only the topmost buds of each season's growth form fruit buds, the lower buds remaining dormant. The result is that the branches have spurs growing intermittently, sometimes two feet apart, instead of being covered with spurs every few inches.

(F) shows a branch of the plum, bearing one- and two-year-old wood. (F) to (G) is the new wood with point of heading-in shown. (E,E,E, E,E) are spurs developing.

Fruit Buds and New Wood

Many kinds of plums fruit on the new wood in the same manner as the peach, while others form spurs. The one- and two-year-old wood of the cherry is much the same as the plum. (U) shows a cherry spur in winter, (T) in summer.

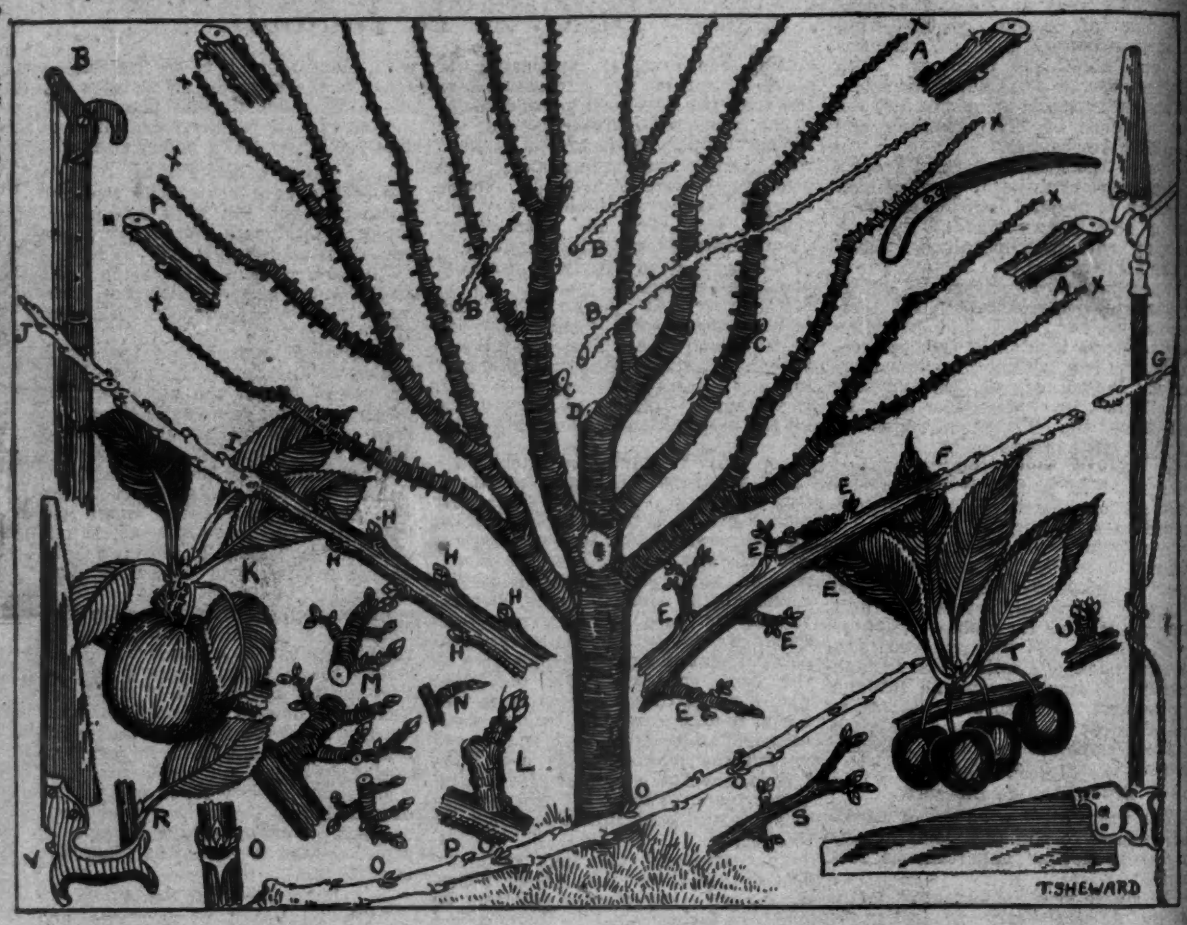
The sweet cherry tree does not require very much pruning after the tree has been given its shape in the young stage. Generally only a few cross branches are to be removed.

Pear, Peach and Apricot

On old pear trees the fruit spurs grow to a large size, and as this weakens the tree by over-cropping and also produces poor fruit, the spurr have to be reduced, as shown at (M). But on young trees this is not necessary. The spurs on year-old wood are something like (N).

The peach fruits on the new wood so when pruning it is necessary to head-in the new wood and thin out any not required for bearing fruit. If the branches that are thinned out are cut back to one or two wood buds, they will develop into young wood for fruiting next year, those branches that have borne fruit being cut away and the new ones replacing them. (P) shows the young wood of the peach that is to be headed-in. (O,O,O,O) are fruit buds with a wood bud between. In cutting back always cut to these buds.

The apricot is pruned in the same manner as the plum. A fruit spur is shown at (S).



The European Red Mite Is an Undesirable Immigrant

By Ernest N. Cory

THE seaboard states usually have to bear the brunt of attacks by introduced pests, and just at this time, when orchardists have countless worries, the addition of another pest seems more than unfair—but that is what eastern orchardists are asked to face in the invasion of their properties by the European red, or plum, mite (Paratetranychus pilosus Can and Franz).

This mite was first reported in the United States by Frost from Pennsylvania in 1919. It was reported by Caesar from Ontario in 1915, by Garman from Connecticut in 1920 and from Maryland by Hamilton in 1921. It has been in Connecticut at least since 1917, therefore it would seem that its dispersal is relatively slow. Only one orchard is known to be involved in Maryland, but the injury there from the pest shows its capabilities for destruction and makes a word of warning to orchardists seem worth while at this time.

This is the time of the year when the pest is most readily located, because it winters in the egg stage and, when abundant, the eggs are very conspicuous, lending a decided red tinge to the area around buds, scars and pruning cuts, especially when viewed in direct sunlight.

The egg is less than half the diameter of the ordinary pin head, globular and usually having a central stalk extending upward a distance about equal to the diameter of the egg. This, of course, is visible only with a high-power lens, and therefore any twigs suspected of having mite eggs on them should be sent to your experiment station in a tight tin box for the examination of the entomologist.

The date of hatching has not been observed in the field, but it is probably about coincident with the leafing out of the tree. The greatest damage occurred in June and July in Maryland, and therefore it would seem that the control of the mite must be effected prior to June in order to prevent serious damage.

By June the dark red adults and lighter red nymphs are in abundance on the under side of the leaves. At first they cause a whitening of the leaves, due to destruction of the chlorophyll, but later the leaves turn bronze, then brown, and finally many fall to the ground.

Destruction of the leaves at this time reduced the amount of bud setting in the Maryland orchards and is said to have caused a decided reduction in the size of the fruit in Connecticut orchards.

The control of this pest has not been thoroughly worked out, though measures adopted in the Maryland orchard gave excellent results from the standpoint of mite reduction.

Lime sulphur 1-50, plus paste, 4 pounds to 50 gallons, gave 98 percent kill. Schnarrs insecticide 1-75 gave a slightly less percentage of kill, while black leaf 40, 16-500, plus 4 pounds of paste, and atomic sulphur gave good control, though not equal to the other two sprays.

Unfortunately, the excessive heat of last June and July gave very destructive burning with lime sulphur in any combination, even when the spraying was begun as early as 4 a. m. and discontinued by 9 or 10 a. m. It would seem, therefore, that earlier, June or May, applications should be looked to for results.

Heavy downpours of rain were very beneficial in reducing the number of mites, and it may be that in years of normal rainfall early in the season the extra moisture will prevent undue multiplication of the pest.

Reports from Connecticut indicate that scalecide at 1-15 applied as late as possible in the spring will be effective in killing the eggs. It is hoped that lime sulphur alone or in combination with other materials will be effective when applied at the correct time.

We have witnessed the heavy toll on American agriculture by many introduced pests; let us hope that this may be one of the lesser evils.

Orchard Heaters in the January Freeze

How Many California Growers Saved Their Crops in One of the Worst Cold Snaps of History

By N. L. Chapin

Editor of the California Farmer

THE January freeze in California gave orchard-heating equipment the severest of tests and emphasized lessons which heater manufacturers and meteoroligical experts have long been preaching.

"Heat efficiently or not at all," is the big lesson of the freeze, says Floyd D. Young of Pomona, Calif., meteorologist of the Department of Agriculture, and author of a government bulletin on frost protection.

Freeze January 19th and 20th. Picture taken January 20th at Leffingwell Ranch, Whittier, Calif. Most of the lemons in this grove were saved by raising temperature ten to twelve degrees with thirty-two of these seven- and nine-gallon heaters to the acre. A hard, icy wind was blowing, and tender growth here and there was nipped, but many blossoms and tiny lemons were saved along with the majority of the mature fruit.

"No grove which the owner proposes to protect," he says, "should be equipped with less than 50 heaters to the acre. An orchard properly equipped and tended during a cold spell can always be protected from damage either to fruit or foliage. But if there is to be a lack of vigilance, lack of foresight and preparedness, or carelessness in regulating heaters so that the oil burns out at a critical time, it would be better to save the expense of the equipment and not fire at all.

Prepared in Advance

"The most perfect system of orchard firing in the world is that of the Limoneira Company at Santa Paula. Here no detail is overlooked, and the firing itself is reduced to an exact science, with every contingency prepared for in advance. Next to this company I would say the Bear Creek Orchard Company of Medford, Ore., has the best system.

"Efficient frost protection is largely a matter of personality. It depends wholly on the directing head of the frost-fighting forces and on his capacity for planning so that the fuel supply shall never run short and that fires will always be lighted and regulated when needed."

The Limoneira Company grows lemons, principally, and uses a heater to every tree, about 80 to the acre, of the modern, high-stack type, holding nine gallons of oil each. The Bear Creek Orchard Company grows deciduous fruit and protects from spring frosts at blossoming time with 105 lard-pot heaters to the acre. This type of heater burns low after about two hours and must be refilled to restore its heating power. Never more than half of the heaters are lighted at once. Refilling at night frequently becomes necessary.

Oil Supply Ran Low

With temperatures in most citrus districts ranging as low as 18 degrees for many hours the first night, nearly as low as the second night and very low for five successive nights, the drain on oil resources and equipment for refilling heaters was severe. Several cars of oil were rushed on passenger schedule into the Pomono district, but teams and tank wagons enough to resupply all groves could not be secured.

Frost hit every district alike, except Rialto, Fontana and Bloomington, where high winds prevented serious damage. Favored groves, close to the foothills and with good air drainage, escaped in some districts. No heating was done in central California, but this district of early Navels had shipped its fruit, and the trees, being dormant, did not suffer severely.

The first official estimate of the California Fruit Growers Exchange of 40 to 50 per cent damage to the orange crop and 35 per cent damage to lemons will stand for some weeks until more accurate figures are available. About 1,500 cars of lemons

(*Continued on page 21*)

Ten-gallon automatic heaters—forty to the acre—with an extra row 25 feet to windward in the navel orange grove of Fred Smith of Pomona, Calif. The entire crop was saved and the trees were undamaged in this grove.

Improved Lime-Sulphur, Lead Arsenate, Milk of Lime Spray

By A. I. Bourne

MUCH less burning of foliage and more effective protection against insects have resulted from a new method of preparing the lime-sulphur, lead arsenate, milk of lime spray, which was discovered early in 1921 by the Department of Entomology of the Massachusetts Agricultural Experiment Station, Amherst, Mass. The method, as described in this article, was tested in the college orchards in 1921, and is recommended to fruit growers of the State.

The fact that most orchard crops are subject to attack from both insects and fungous diseases has made it advisable for horticulturists very generally to adopt a spray program involving the combination of an insecticide and fungicide in the same application.

Owing to the great extent to which sulphur compounds have supplanted copper sprays, the lime-sulphur (summer strength) and lead-arsenate combination is probably the one most widely used among orchardists today.

Unfortunately, when lime-sulphur and acid lead arsenate (the type on the market) are brought together they immediately begin to act on each other, causing more or less decomposition of both. This is evidenced by the quick appearance of a black precipitate of lead sulphide which drops to the bottom of the spray tank.

Decomposition Causes Foliage Injury

This decomposition, while possibly not seriously impairing the value of the spray as a fungicide, does very definitely decrease its insecticidal value. In addition, considerable arsenic is rendered soluble, with the consequent danger of severe injury to foliage. This last will explain why growers have so often experienced burning of foliage in their orchards following the application of this combination.

In 1919 experiments by the Oregon Station, on the chemical nature of these reactions, led to the recommendation that milk of lime should be added at the rate of 5 pounds to 50 gallons of spray. This addition materially checked the breakdown. The value of the spray as an insecticide is thus retained, and the danger of foliage injury is to a great extent eliminated.

Early in 1921, in the course of the preparation of Bulletin 201, "Insecticides and Fungicides for Farm and Orchard Crops in Massachusetts," the writer made some laboratory tests of the methods of adding the milk of lime to this spray. It was found that if the milk of lime and lead arsenate were mixed together and then poured into the dilulted lime-sulphur, much better protection against breakdown and burning of foliage was afforded than if the two were added separately. In this case the protective agent was present when the two active ingredients of the spray were brought together.

Test Shows Method Desirable

The Department of Pomology adopted this method in spraying college orchards this past season, and their reports were very favorable. This method showed a marked improvement over the former. They noted the following facts:

The physical nature of the spray was much improved.

There was very little sediment left in the bottom of the tank after spraying, consequently it was not necessary to clean out the tank thoroughly before each refilling. This meant a considerable saving of time in the course of a day's spraying.

There was no blackening of the men or equipment, a very objectionable feature of the old method.

The spray was fully as easy to prepare by this method and required no more time.

Most important, no burning was noted with this spray.

Both in 1920 and 1921 some blocks were sprayed with materials mixed by the old method, and the above facts are based on comparisons between the two.

In view of the above results, this method seems worthy of recommendation to the orchardists of the state, where this combination is included in the season's program of sprays.

Directions for Preparation

For 200-gallon tank.

I. Dilute the lime-sulphur as usual, filling the tank about three-fourths full.

II. Slake 20 pounds of fresh quicklime (caustic, stone or builders'). Procure the best quality for this possible. Add water carefully during slaking to prevent "drowning" the lime.

III. When thoroughly slaked, add water to cool and make a good "milk." About 30 gallons of water will be sufficient for this purpose. Stir in the proper amount of lead arsenate and thoroughly mix the two.

IV. Strain into the spray tank with the 20 gallons of water needed to fill it, mixing with the lime-sulphur with vigorous agitation to secure an even distribution throughout.

Quality of Lime Important

The best quicklime possible should be procured. If inferior grades are used there will be a considerable amount of carbonated or air-slaked lime present, which will hinder slaking and make a quantity of gritty, inert material which cannot be allowed in the tank, and is worthless as a plant protector. A granulated lime will be much more readily slaked than the lump form, but, on the other hand, it is apt to deteriorate more rapidly unless kept carefully protected from the air.

What Happened at the Washington Conference

By Samuel Adams

THE National Agricultural Conference, which convened in Washington the last week in January as a result of President Harding's request to Secretary Henry C. Wallace, was possibly the most representative gathering ever called. Much good will undoubtedly result from the meeting. President Harding and Secretary Wallace are to be congratulated for their foresight and courage in calling the conference.

The consensus of opinion, as worked out in the many resolutions adopted, reflects the thought of not only the agricultural delegates from every state in the Union, but the reactions of the representatives of industries closely allied to or dependent upon agriculture. Practically every national farm organization was ably represented and many state and regional associations. Along with these farmer delegates, possibly for the first time in a national assembly sat the representatives of the packers, millers, bankers, wholesalers and other related industries.

President Outlines Plan

President Harding's suggestions to the conference were fully covered in the long list of resolutions adopted. In short, he made six main points.

Development of a thorough code of law and business procedure, with the proper machinery of finance through some agency to insure that turnover capital shall be generously supplied to the farmer and on as reasonable terms as to other industries.

Formation of co-operative loaning, buying and selling associations.

Creation of and instrumentalities for collection and distribution of useful and true information so as to prevent violent fluctuations of markets.

Practical development of the water resources of the country both for transportation and power, including plans for electrification of the nation's railroads.

Methods for bringing about further reclamation, rehabilitation and extension of the agricultural area.

Promotion of a new conception of the farmer's place in the national, social and economic scheme.

Strengthens Glue in Bloc

Although the president's address was heartily approved by the delegates, they took exception to his statement that agricultural or other blocs are not necessary in Congress. They unanimously "endorsed those members of the Senate and House comprising the agricultural blocs who, regardless of party, so early saw the emergency and have so consistently supported a constructive program for the improvement of agriculture and the betterment of rural life."

The delegates thus served notice upon the administration that they had no objection to its promoting the program of the blocs, but they did not intend to abandon their friends and depend upon the vagaries of political expediency to pass their measures. On Capitol Hill it is said that the president's reference only served to strengthen the glue in the blocs.

Lower Railway Wages

Samuel Gompers, president of the American Federation of Labor, made a big fight against a resolution favoring the reduction in railway wages and was successful in having a resolution referred back to a committee, but it was brought before the conference later by another committee, in broader language, and unanimously adopted.

It was recommended that the freight rates on farm products and allied industries be reduced to those in effect August 25, 1920 and that they put the above reductions into effect at once, and further reductions as rapidly as reductions in operating expenses will justify and that the carriers readjust freight rates on other commodities as quickly as possible upon the basis of what the traffic will reasonably bear.

Congress was asked to repeal Section 15-A of the Interstate Commerce Act, containing the provisions as to the fixed amount of return that must be provided for, if possible, on the aggregate value of railroad properties regardless of the economic conditions, and to prevent the fixing of a valuation upon railroad properties upon the so-called "land multiple" theory. This theoretical basis, it was stated, would increase the present transportation burden of a return upon several hundreds of millions of dollars.

It was requested that full powers of the State Railroad Commissions as they existed immediately prior to the Federal control of railroads (except as to the control and distribution of cars in interstate commerce) be restored.

The delegates were opposed to the many abuses that have grown up through violations of the principle of the long-and-short-haul clause, which requires that rates to intermediate points shall not exceed the rates between the more distant points. For many years the intermountain states were discriminated against by the charging of more for the short hauls than for the long hauls. This situation has been corrected, but today there is an effort to change this, and we earnestly recommend to the Interstate Commerce Commission that no change shall be made in the present adjustment."

Approved Ford's Offer

The popularity of Henry Ford's offer to lease the dam and operate the nitrate plants at Muscle Shoals, Alabama, was attested when the resolution presented by the committee was amended to indicate to Congress that the delegates favored leasing the property to him. The committee had not previously been informed that Mr. Ford's tender contained an absolute guarantee to operate the nitrate plant "at approximate present annual capacity in the production of nitrogen and other fertilizer compounds for the period of the lease, 100 years."

Credit a Big Factor

The subjects of credit, marketing, co-operation and transportation monopolized much of the thought of the conference. Chief among the changes recommended is the establishment of an intermediate form running from six months to three years. As the result of the deliberations of the Congressional Joint Agricultural Commission, bills to this end have been introduced. They would create a "farm credits" department in each of the 12 Federal Farm Loan Banks which would rediscount agricultural paper running for as long as three years from banking institutions and lend money directly to farmers' co-operative institutions, selling bonds based upon the banks' paper and warehouse receipts of the co-operatives.

As a provision against Congressional delay in providing the farm credits department in the Federal Farm Loan banks, the delegates approved the amending of the War Finance Corporation Act extending its activities until July, 1923.

Going upon the theory that the present limitation of $10,000 upon individual loans by the Federal Farm Loan Board limits borrowers, the delegates favored an amendment making it possible to loan a maximum of $25,000. They also asked that the system might loan upon all of the commodities which the farmer ordinarily puts up as collateral.

Agriculture will participate in the economic and financial conference at Genoa, if the wishes of the delegates are granted, thus giving their representatives opportunity to counsel with the principal customers for our products.

The conference handed the Congress a real job when it recommended that it take such steps as will immediately re-establish a fair exchange value for all farm products with that of all other commodities. Equally as great a puzzler was given the gentlemen who inhabit the Capitol when the conference asked them to appoint a committee to stabilize the American dollar. "To some proper authority" also was delegated the task of investigating price guarantees.

Water Transportation and Agriculture

The only snag encountered in the adoption of the approval of the proposed Great Lakes-St. Lawrence waterway was Representative P. G. TenEyke of Albany, N. Y. However, the conference, with full steam ahead, quickly approved immediate action on the project. It also stamped its O. K. upon the proposition to charge tolls on vessels passing through the Panama canal.

Taking a view toward future development of transportation, the delegates went on record as favoring the utilization of our inland waterways, such as the Mississippi, Ohio and Red rivers.

Extensive Resolutions on Marketing

Among the resolutions adopted on the subject of marketing, the demand that Congress clarify the language of the Clayton amendment to the Sherman Anti-trust Act in such a way as to make it possible for co-operative organizations to operate without breaking the law stood paramount. The farmers also wish amendments to the Warehouse Act to facilitate financing warehoused crops, and better administration of the act. They accentuated the need for better temporary holding facilities for farm products in producing districts until delivery or shipments are made and better accommodations at receiving centers. Complaint also was registered against lack of uniformity of state storage laws and improper enforcement. They asked for a federal cold storage act which would be in keeping with the interests of both producer and consumer and the construction of more United States government standard refrigerator cars.

Provision is made through the resolutions for greatly improving the crop and market statistics issued by the Department of Agriculture, bringing them down to a county unit and including each fifth year an agricultural census.

Detailed recommendations were also made concerning conservation of forests, marketing of forest products co-operatively and the furtherance of research work in agriculture and forestry. The co-ordination of State and Federal regulation and the bettering of farm and home life.

The conference handed the Department of Agriculture and its co-operative agencies, the Congress, business and the farmers themselves a real program, both for immediate consideration and long-time action. If Congress carries out the request of the administration's conference, passing even the emergency measures, it will not adjourn by next July as it has been planning.

Do Fruit Growers Want this Service

By R. B. Cruickshank

THERE is great need in North America for a central organization which will combine the forces of existing fruit bodies and which can act as a clearing house of all information of interest to fruit growers. It will take time and much effort to build up such an organization of sufficient magnitude fully to satisfy this need and to finance its development and work, This can be done if the fruit growers of the United States and Canada will lend their assistance.

The American Pomological Society, for over 70 years an influence for the betterment of the fruit industry, is now reorganized with a broader program and on a business basis, with an active executive committee, a board of business managers and a paid secretary with office facilities. This society has pledged itself to this end.

The services that will be given members in 1922 are:

1. The annual convention, with valuable program.
2. The report of the proceedings of the convention, together with the Pomological Annual, containing much material indispensable both to commercial and amateur growers.
3. A quarterly bulletin containing other matter of concern to the society and of permanent value.
4. Letters at frequent intervals which will embody information of current interest.
5. Reports on the size, condition and character of fruit crops gathered and disseminated.
6. A campaign for greater fruit consumption carried on through all available organizations.
7. Efforts lent to the stimulation of export trade.
8. Affiliation with and service to state, provincial and local horticultural societies.
9. Co-operation with fruit growers' marketing associations.
10. Encouragement of better grading and packing.
11. Encouragement of the breeding of new fruits and the thorough testing and dissemination of valuable kinds.
12. Awarding of prizes for meritorious fruits, worthy inventions and for notable contributions to the science and practice of pomology.
13. Making public the best information on the new means and methods in fruit growing.
14. Condensed reviews of new books and bulletins.
15. Establishment of branches in the colleges of agriculture.
16. Registration of new fruits, with accurate descriptions.
17. Legislation encouraged and fostered for the extension and safeguarding of the fruit interests.
18. Correspondence with the membership from the secretary's office.

Officers of the A. P. S.

The officers of the American Pomological Society are as follows:

President, L. H. Bailey, Ithaca, N. Y.; vice-president, Paul C. Stark, Louisiana, Mo.; second vice-president, W. T. Macoun, Ottawa, Canada, and secretary-treasurer, R. B. Cruickshank, Columbus, O.

Executive committee: J. C. Blair, Urbana, Ill.; Frederick Cranefield, Madison, Wis.; F. P. Downing, South Bend, Ind.; W. W. Farnsworth, Waterville, O.; H. H. Hardie, Hudson, Mich.; H. H. Hume, Glen St. Mary, Fla.; C. I. Lewis, Salem, Ore.; W. P. Massey, Winchester, Va.; W. S. Perrine, Centralia, Ill.; G. Harold Powell, Los Angeles, Calif.; F. C. Sears, Amherst, Mass.

You are urged to read very carefully the above program of the American Pomological society. Consider of what value the services they offer would be to you and to the fruit industry. Having formed your opinion, write to R. B. Cruickshank, Secretary, Columbus, O., and tell him just what your views are in regard to this mat-

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A SPREADER for ORCHARD SPRAYS

Professor A. L. Lovett, the eminent entomologist of Oregon Agricultural College, in speaking of Casein as a spreader, says: "It has an advantage in cheapness, availability, compatibility in most spray combinations, and in ease of preparation. For these reasons it was given first rank in our subsequent tests and experiments."

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Perfect Spread—A thin film of protecting spray solution, spread evenly over every part of tree, foliage and fruit.

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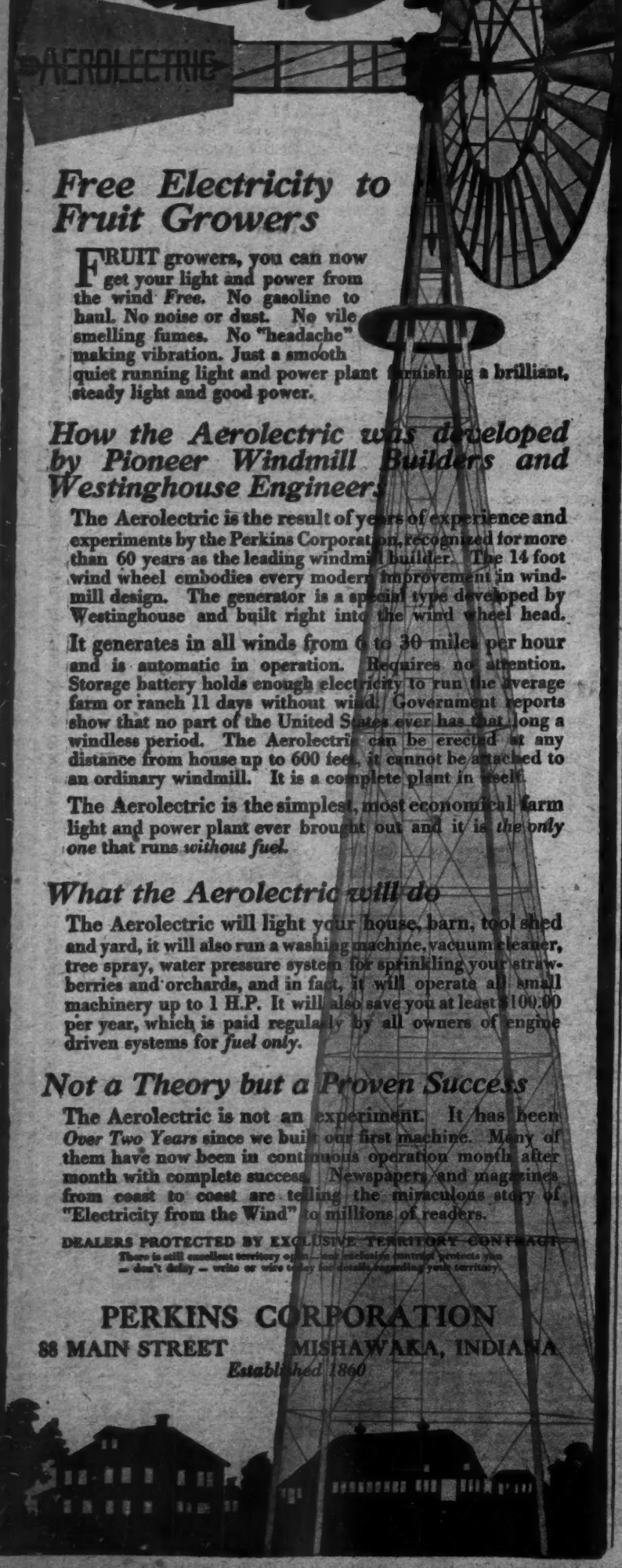

Free Electricity to Fruit Growers

FRUIT growers, you can now get your light and power from the wind *Free*. No gasoline to haul. No noise or dust. No vile smelling fumes. No "headache" making vibration. Just a smooth quiet running light and power plant furnishing a brilliant, steady light and good power.

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The Aerolectric is the result of years of experience and experiments by the Perkins Corporation, recognized for more than 60 years as the leading windmill builder. The 14 foot wind wheel embodies every modern improvement in windmill design. The generator is a special type developed by Westinghouse and built right into the wind wheel head.

It generates in all winds from 6 to 30 miles per hour and is automatic in operation. Requires no attention. Storage battery holds enough electricity to run the average farm or ranch 11 days without wind. Government reports show that no part of the United States ever has that long a windless period. The Aerolectric can be erected at any distance from house up to 600 feet, it cannot be attached to an ordinary windmill. It is a complete plant in itself.

The Aerolectric is the simplest, most economical farm light and power plant ever brought out and it is *the only one* that runs *without fuel*.

What the Aerolectric will do

The Aerolectric will light your house, barn, tool shed and yard, it will also run a washing machine, vacuum cleaner, tree spray, water pressure system for sprinkling your strawberries and orchards, and in fact, it will operate all small machinery up to 1 H.P. It will also save you at least $100.00 per year, which is paid regularly by all owners of engine driven systems for *fuel only*.

Not a Theory but a Proven Success

The Aerolectric is not an experiment. It has been *Over Two Years* since we built our first machine. Many of them have now been in continuous operation month after month with complete success. Newspapers and magazines from coast to coast are telling the miraculous story of "Electricity from the Wind" to millions of readers.

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Established 1860

Orchard Problems and their Solution

by Paul C. Stark
Associate Editor

For the benefit of our new subscribers, I wish to explain that the Orchard Problem Department is for the special benefit of all of our subscribers and if you have any special problems to solve, write to Mr. Stark, who is our Associate Editor in charge of the Orchard Problem Department.

Mr. Stark has lived in a horticultural atmosphere all his life, receiving his early training from his father, the late Clarence Stark, who was recognized as one of the leading horticultural authorities of the past generation. Mr. Paul Stark later graduated from Cornell and afterwards took a postgraduate course in the Cornell Horticultural Department. He studied horticulture abroad and for many years has been in charge of orchards of his company located in various sections of the United States. He also superintends and operates his own personal orchards of 5,000 trees in Missouri. With his scientific training and past experience, we believe Mr. Stark can help solve the problems of our subscribers as well as anyone whom we know.

SAMUEL ADAMS, Editor,
American Fruit Grower Magazine.

Garden Tractors

Can you tell us how to make a hand tractor, say a six-horse power one, do the work on a fruit farm on Long Island? There are about 500 apple trees beginning to bear, 100 pear trees and a few crabs, plums, etc., some small fruits and family garden. We lost the horse this fall and do not want to get another if a garden tractor will take his place. Can sometimes hire two horses for heavy plowing, but should have our own outfit now for spraying. Is there a small power sprayer which can be drawn by a hand tractor?—C. L. L., New York.

YOU do not give the exact acreage that you wish to cultivate, but judging from the number of trees, it is a question whether a small garden tractor will be large enough to handle this satisfactorily. You can figure that a garden tractor will about do the work of one good horse. It has some advantages over a horse though there are possibly disadvantages in some ways. If you could arrange to get your heavy plowing done by some neighbor, you could probably handle most of the cultivation with a garden tractor.

There are small power sprayers made by the different sprayer companies that can be pulled around by one horse and if your ground is not too rough your garden tractor could probably pull one of these outfits. On the other hand, if you have many ditches to cross or the ground is quite rolling or under any circumstances where the garden tractor would have a hard time getting traction, this probably would not work out satisfactorily.

The garden tractors are splendid little machines and there is certainly a place for them, but they, of course, have their limitations.

Cherries and Strawberries

I am looking for a late cherry that will come on the Kansas City market after the Montmorencies. Can you give me data on the Wragg, Morello and Suda? I have heard Ostheimer very highly spoken of. Is it worth while? Is there any other late variety that is worth considering? What is the season of the America plum relative to the native Wild Goose? Has the Compass Cherry plum any commercial possibilities in this section? Have you any information as to the probable increase or decrease in commercial strawberry planting in the country tributary to Kansas City, particularly southern Missouri and Arkansas? In the face of reduced estimates from these sections, the shipments were so heavy and continuous as to take all the profit out of the limited local crop that escaped the weather. Is there any type of commercial fertilizer that has proved its worth on strawberry fields, particularly in renovating old ones?—H. L. D., Kansas.

THE Wragg, Morello and Suda are all of the English Morello type and for a late cherry to follow Montmorency, don't believe you could pick out a better one than one of these three. Ostheimer has been grown successfully, but I believe you will get better results from one of the three varieties mentioned above.

America plum is one of the very best all-purpose plums that you can grow, very hardy and produces a good crop of fruit without much care, although of course, it will respond very profitably to good care. Compass Cherry plum has given fairly good results, but from a commercial standpoint I would rather grow plums such as America, which ripens very early. Wild Goose ripens in mid season.

Strawberry planting generally goes in waves. When fruit prices are extremely high, a great many plants are put out and then when prices drop somewhat the people who are easily discouraged neglect their patches and the ones who take care of their plantings are ready when the high prices come back. Strawberry planting in your section properly cared for, will, in my opinion, pay good returns over a period of years. There is, of course, a more frequent variation in strawberry production because it only takes two years to get a planting established, whereas in apples or other fruit trees, it takes longer for the trees to come into bearing and as a result, there is not the tendency to overplant. Taking into consideration the vast number of trees that have died out in the central west in the last 10 years due to neglect of orchards, there is bound to be a very severe shortage in fruit. All one has to do is to look at Government figures of the number of bearing apple trees compared to 10 years ago and this point can easily be seen.

Regarding fertilizers, in a Missouri Bulletin, Prof. Chandler recommends that 250 to 300 pounds of acid phosphate or steamed bone meal per acre be used, preferably one year before the crop is harvested. On land which has been devoted to strawberry production, the nitrogen and humus content can be maintained by the use of green manures. By using a green manure in your rotation and turning under a good crop preceding the planting of strawberries, this will aid nitrogen and also help to clear the land of weeds.

Manure and Control of Borers

I have 50 Stark Delicious apple trees planted fall of 1920. They are on mountain land, a dark loam soil and have made two or three foot terminal growth. I wish to push them as much as possible. Which is the best commercial fertilizer to use and when should I use it? Also, have 125 three year old trees of other varieties which have made a good growth. When is the best time to put manure around them and how close should I put it to the trunks of the trees? The borers are very bad on my three year old trees. Is there anything I can do to prevent them, other than cut them out?—C. H. F., Virginia.

IF YOU decide to put fertilizer on your young trees planted fall '20, I would advise the use of nitrate of soda, using about one-half pound to the tree. The fertilizer should be applied around the foot of the tree and scattered in a circle with a diameter of about 18 inches from the tree, being careful not to get it too close to the trunks. Manure should be applied in the same way. On older trees, spread

the manure out farther so that it extends out as far as the branches extend. The fertilizers may be left on the surface to be washed in by the rains or may be harrowed or lightly plowed under the soil. These fertilizers should be applied in early spring. I advise the cutting and digging out of borers with a knife and pliable wire, going over your trees twice a year—in early spring and again in late August or early September, because then the young borers are small and near the surface, being easy to cut out at that time.

Orchard Location and Local Markets

In the course of the next year I intend to set out an orchard of about fifty acres. There is a location about half way between Cleveland and Akron about 18 miles from each place with good paved roads each way giving two excellent local markets for my fruit. By using trucks I could market my own fruit and eliminate the commission house. It seems to me the location is excellent, being high, well drained and on the sides of a large valley in a region known as "Boston Ledges." Soil is mostly clay loam. For all the seeming excellence of the location there is practically no fruit grown in this region or in fact in this part of the state in a commercial way. Everyone I talk to says, "Don't do it—this is not a fruit country." But I cannot see why it cannot be done and the fine markets we have here and great ease in marketing the fruit tempts me to try it. Would like to plant a large block of early summer apples such as Liveland Raspberry and Yellow Transparent and the remainder to Stayman Winesap, Delicious, Golden Delicious and King David with perhaps a few Wealthy or Dutchess.

What do you think of the proposition? Do you think I would succeed in this locality and what do you think of my choice of varieties? Do you think the summer apple varieties would be a paying proposition? If this locality is really wrong I am perfectly open minded about selecting another one be it east, west, north or south. Where would you advise me to go?—C. R. R., Ohio.

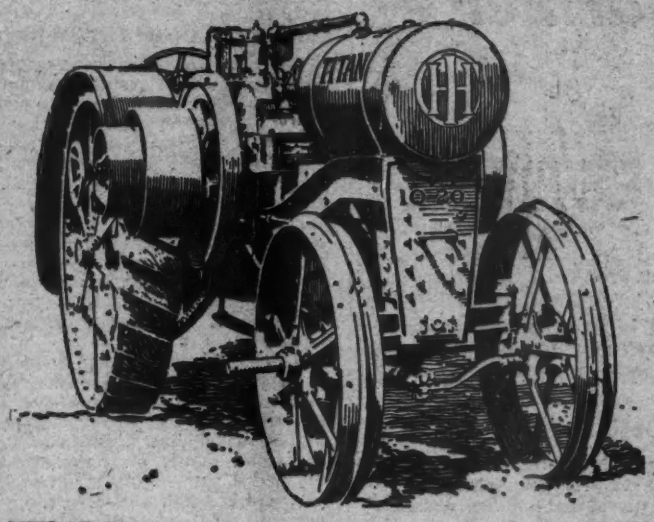
I HAVE read your letter with considerable interest and there is one point about which I want to correct you, namely the fact that commercial fruit growing has not been tried out in that particular section. I personally know one of the largest fruit growers in Ohio who has large orchard interests in that general locality and he is making quite a phenomenal success. He was formerly a physician but has given up his profession as his orchard interests have developed into a large and profitable investment. I believe your plan of taking advantage of the good roads to local markets is splendid and I think you will find that this fact will go a long ways towards insuring a successful business. The land as you describe it as being high, well drained and of clay loam, seems almost an ideal location. Judging from my own personal observation of that section you refer to and your descriptions, I believe you have a splendid location to grow a profitable orchard and to successfully market the fruit. The advice of some of your neighbors discouraging fruit growing in that locality can be duplicated in almost any locality if you listen to certain kinds of people. In other words, certain people in nearly every section have neglected their orchards and of course have not made a success of them as it is necessary to give an orchard attention if it is to be made profitable. I have known many men who have gone into certain sections and been advised against planting orchards and these same men who had faith in fruit growing and worked grew splendid orchards and made big profits.

The varieties you mention and your plan of using early, mid-season and late varieties are excellent. I haven't anything to suggest regarding additional varieties besides the list you have already selected. Summer apples, particularly in local markets are very profitable. You will not only be able to sell a lot of your fruit on your local market, but you will find that a large automobile trade will come direct to your orchard to get the fruit and you won't have the big expense of buying containers and cost of hauling.

$200 Cut in Titan Price

Now $700 f. o. b. Chicago

—and a P & O 3-furrow Plow FREE



Harvester Company's Exceptional Offer

Effective Feb. 3, to May 1, 1922

The Harvester Company makes this special offer to apply on all new International 8-16 and Titan 10-20 tractors purchased by its dealers on 1922 account: Each farmer purchasing one of these Titan tractors, for delivery on or before May 1 next, will be given by the Company *absolutely free*, f. o. b. Chicago, a 3-furrow P&O plow. On the same terms, each farmer who purchases an International 8-16 will be given a 2-furrow P & O plow.

THE Titan is not a stripped tractor, pared down to make a price, but complete with all essential equipment—*friction clutch pulley, fenders, platform, throttle governor, adjustable drawbar, angle lugs, brakes.* This equipment, worth more than $100 and necessary on any tractor to make it serviceable and safe, is included in the new $700 price. *No extras to buy.*

The Titan is a real 3-plow tractor and has belt power in proportion. It has enormous reserve power. Its 3-plow capacity cuts the labor cost on every field operation—a big item in farm operating expense. Titan is famous for long life. It has proved in eight years of use that it outlasts two or three small inferior tractors. Does best work on cheap kerosene. Low repair and upkeep expense. Always on the job.

$230 Cut in International 8-16

The International 8-16 tractor now sells for $670, f. o. b. Chicago. Until May 1, 1922, each purchaser of an International 8-16 covered by the Special Offer will be given a P & O 2-furrow plow free. If the purchaser of either tractor now owns a suitable plow we will substitute a tractor disk harrow.

Greatest farm power values ever offered. Neither horses nor any other tractor can equal them.

Special Offer Expires May 1st. See the McCormick-Deering Dealer Now!

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Others are making money—lots of it. Letters just received during this year tell of wonderful successes. You can succeed, too. Start in all you need. I'll gladly help you. Furnish everything—complete outfit, materials, secret formula, full directions, wrappers, etc. Send post card for illustrated book of facts. Tells how to start. Explains most successful methods. Gives all information needed. It's free. Write now!

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Put it Beside a Diamond Then if anyone can tell it from a diamond, send it back and we refund deposit. If you buy, pay the balance at $2.00 per month until $12.50 is paid. Write today. Send strip of paper fitting end to end around finger joint for ring size.

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A Message to the American Farmer

ON A TRADE BASIS YOUR FARM PRODUCE WILL GO AS FAR TODAY IN THE PURCHASE OF A PREST-O-LITE BATTERY AS IT WOULD HAVE GONE IN THE DAY OF YOUR HIGHEST PRICE MARKET.

Your ability to buy is a determining influence on national economic adjustment. Your purchasing power is tremendous.

Wheat, corn and other produce must bring their proper return in purchasing power before normalcy is reached.

Because of this and the very nature of your business, price must be a prime consideration in your buying.

And the Prest-O-Lite Company, Inc., has brought its prices to the lowest level in years. Prest-O-Lite has consistently been the last to raise and the first to reduce prices.

Figures Tell the Story

*$19.90 is the trade-in-price for a regular quality Prest-O-Lite Battery for popular makes of light cars. This price is 45% lower than the 1920 prices for this type.

*Other outstanding values are: $24.65 (trade-in price) for a battery for the Buick, Chandler, Chalmers, Oakland and Hudson. $32.30 (trade-in price) for a battery for the Maxwell, Dodge, or Franklin.

There are similar reductions on all Prest-O-Lite Batteries; and *there is a correct type of Prest-O-Lite Battery for every make of car or truck.*

Prest-O-Lite prices came downward, but Prest-O-Lite quality went upward.

These batteries are not special made, are regular top quality Prest-O-Lite with the famous Prest-O-Plates.

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All Prest-O-Lite batteries are covered by a liberal and specific guaranty. In addition you have the guaranty of the Prest-O-Lite reputation.

All Prest-O-Lite Service Stations operate under a planned policy of service. THE CAR OWNER MUST BE PLEASED. And Prest-O-Lite is the oldest service to motorists.

Prest-O-Lite Service Stations do everything possible to keep batteries —no matter what make—out of the repair shop.

Go to the nearest Prest-O-Lite Service Station, and let its friendly experts explain how to avoid battery trouble. Their advice will prolong the life of your battery regardless of make. They will not tell you that you need a new battery until you do.

At the right time exchange your old battery for a new Prest-O-Lite at our low prices.

*Slightly higher prices prevail on the Pacific Coast and other distant points.

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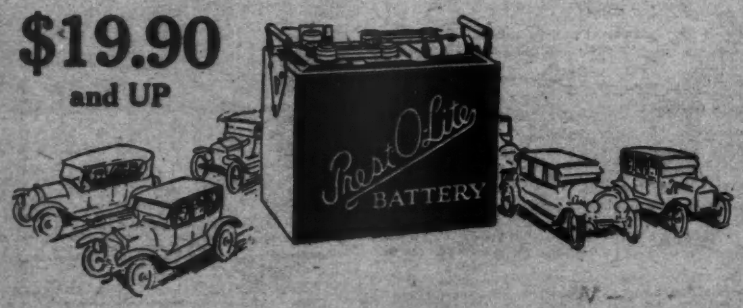
Prest-O-Lite also makes a battery for every house lighting system manufactured. They are in every way Prest-O-Lite quality. Ask our nearest service station, or write for details.



Prest-O-Lite BATTERY

Charles A Green's Walks and Talks With Readers

Advice About Strawberries

MY FAVORITE for many years has been the Corsican strawberry, which is one of the largest in size and which yields good pickings at the opening of the season but does not hold out so well later in the season as some other varieties. It is of good quality and midseason ripening.

Experienced fruit growers have come to the conclusion that there does not exist a perfect variety of any fruit any more than there is a perfect man or woman. We have to put up with some faults with almost any variety of fruit.

The Prolific is a comparatively new variety though it has been long known here in this particular locality. It was introduced by the Geneva experiment station which is a high authority and this New York station has recommended it very highly in several bulletins and has had a colored plate made showing six or eight different sizes and shapes of this berry.

Prolific strawberry is an ideal berry particularly for market, but like many other good varieties in some localities it is subject to attack by leaf spot or leaf blight. I should advise spraying Prolific with bordeau mixture in the spring, which would be good advice with any variety of strawberry. There is nothing lacking in the flavor of either of these two varieties. If there is any choice it is in favor of the Corsican as to flavor. Both varieties are perfect in blossom. Prolific has yielded 14,502 quarts per acre. It retains its large size throughout the season unless a drought prevails. Prolific is a firm berry.

Roadside Fruit Trees

THIS is comparatively a new idea. I knew of nothing of this kind twenty, thirty or forty years ago, and yet it is probable that moderate quantities of farmers' productions have been sold directly to the consumer. Of late years considerable income has been secured by farmers and fruit growers through having exposed for sale small or medium sized packages of strawberries, raspberries, grapes, peaches, pears, plums, quinces, also butter and eggs and buttermilk.

City people who own automobiles desire to ride almost daily in fair weather. It adds to the attractiveness of the ride if they can have some object in view. The picking up of supplies along the roadside furnishes an excuse for getting out into the open. They can add to the pleasure of their trip and have a feeling of satisfaction if they can find what they want for sale by the roadside of the farmer or fruit grower, even though they have to pay a fairly high price for the same. But I think it a mistake to charge as much or more for the same product as it can be bought for at the grocery.

In many instances the fruit stand may be very rudely constructed, or in other cases there may be no stand at all, the boxes or baskets resting in full view of the highway upon the green grass in front of the house, generally in charge of one of the children. The sales most often are made in the morning or late afternoon. Everything should be made as attractive as possible to the eye of the purchaser. There should be clean baskets. Everything should be clean in connection with the produce offered.

Often flowers are added to the display and to the amount of sales. Some people would be more interested in the flowers than they would be in the fruits. I have a wealthy friend who takes great delight in driving through the fruit section bordering Rochester in every direction, his object being to carry home a moderate load of supplies for his table. There may be an object lesson in this sales department at the farm, especially to the children who need some method of learning the value of money and the value of courteous service.

Lightning Rods

I FAVOR the placing of lightning rods on all prominent farm buildings. Nearly all my buildings, and there are many of them, are now protected with lightning rods. I have found that farm buildings are much more likely to be struck by lightning than city buildings. A large horse barn and grain barn on my farm was struck by lightning and entirely consumed. I consider lightning a far greater menace than anything else to farm buildings.

In former days less was known about the character of lightning and about the placing of rods on barns and houses than is known at present. Now we know what to do but previously we did not know. For instance, we find that there is no necessity for many of the requirements of former days, such as glass insulators. We know now that lightning will not leave a good conductor such as copper or iron for wood. My recent lightning rods were simply flat bands of copper nailed into the woodwork without insulators. When you get lightning rods placed upon your building see that you are dealing with an honest man. This will apply to other affairs as well as lightning rods. The word lightning rod at one time was in such disfavor it was considered more of a joke than anything else to suggest lightning rods.

Sweet Apples

IN OLD days many sweet apples were planted. Fruit was so abundantly produced in the early days, provision was made for feeding apples to the pigs, the horses and the cows. For this purpose sweet apples were preferred to sour apples and this may have been one reason why so many more sweet apples were planted in the old times than are planted at present.

One of the sweet apples of early days was the Golden Sweet, which was a marvelously productive variety and the quality was good. Of late years fewer sweet varieties of apples are planted. Planters seldom mention sweet apples when they are sending in their orders to the nurseries. There does not seem to be so much demand for sweet apples by the buyers. Sweet apples are not so valuable for cooking, that is for pie making, etc., but they are far better than sour apples for baking. A baked sweet apple is certainly a delicious morsel fit food for a queen. Sweet Bough used to be one of the favorites but has seemingly deteriorated of late years. Tolman Sweet is of poor quality. Pound Sweet is a splendid variety, large and delicious. Hendrick's Sweet is valuable.

Cultivate—Cultivate

I WROTE my superintendent during a severe drought, telling him that the most he can do for the millions of plants, vines and trees is to cultivate and then to cultivate more and then not to hold back cultivation. There is just this one thing that he can do for his plants and that is to cultivate,

first through the horse cultivators and further through the hoes in the hands of our workmen.

It is difficult to explain why cultivation during drought tends to increase the moisture. The first thing I think of that causes the cultivation to increase the moisture is that the loose condition of the surface soil prevents rapid evaporation of water from the soil.

My stenographer, taking notes, says that she would naturally suppose that cultivation would lessen the moisture of the soil instead of increasing it. The natural thought is that if the soil was crusted over firmly and tightly it would hold the moisture in the soil where it could not escape, but directly the opposite is found to be true. Then the question is asked, "Does the loose condition of the soil, made loose by cultivation, enable the soil to gather moisture from the atmosphere as well as from the subsoil? There are doubtless other actions of heat and shade entering into this problem with which few of us are familiar. We have found, however, that by placing a flat stone or a board over the soil the moisture is retained.

Alfalfa in the Orchard

By C. I. Lewis, Associate Editor

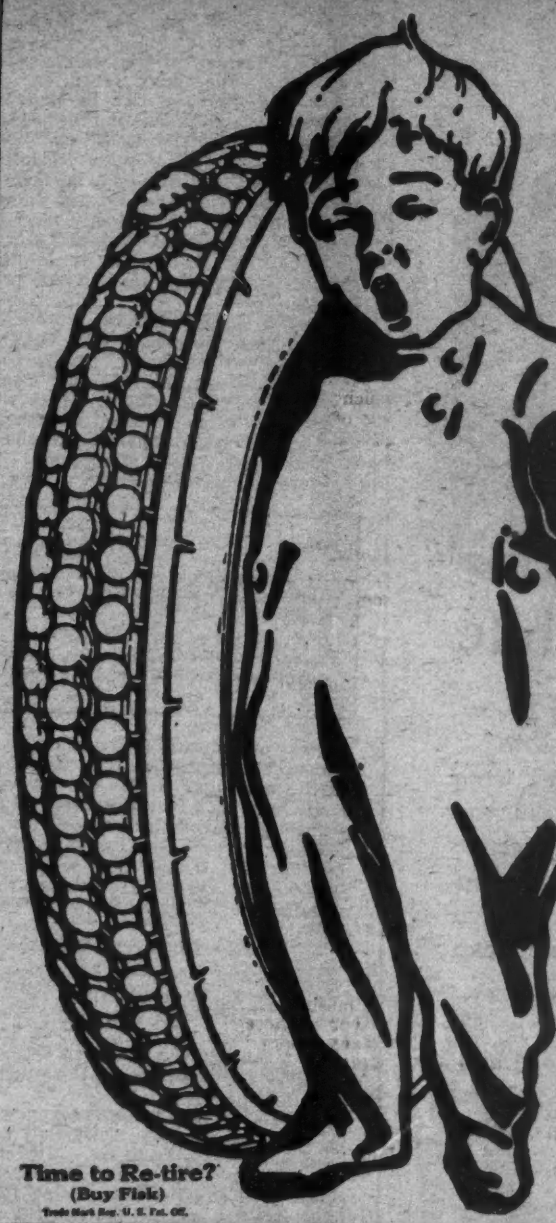
As the growing of alfalfa in irrigated valleys is now more and more a common practice in the orchards, a question that is paramount at this time is how best to use alfalfa. In the earlier days the orchards were young and the grower needed every penny that he could secure, it was highly desirable to use the alfalfa or clover for forage. Now that more growers are past this period, they should consider more and more the permanent fertility of the soil. If the hay is taken off indefinitely, sooner or later it will deplete the soil of some of its necessary elements. More and more growers are coming to realize that it is better not to remove the hay from the orchard, but to use it in building up the soil.

The question naturally comes up, what is the best way to handle alfalfa for soil building? To answer this question intelligently, one must know whether or not there is an abundance of water, must know the type of soil to irrigate and the cost of irrigation. Where there is an abundance of water and a good free soil, the alfalfa can be irrigated by the rill or furrow system and can be frequently mowed with a mowing machine. However, where there is a limited amount of water where the soil takes water slowly, thus making the cost very high or almost prohibited, better methods than mowing can be practiced.

Discing early in the season, by February or March, followed by discing whenever the alfalfa gets high, has proved to be a good practice. The advantages of this system are: That first it takes less water than the old system; it gives a much more even distribution of water and allows the water to reach all the roots of the trees.

In many an orchard where alfalfa is grown, an investigation will show that the strips between the trees in the rows rarely receive enough water. By discing the alfalfa in around the trees, more thoroughly, the water penetrates such areas. By a better penetration of water, we have a less run-off. An examination will show a great increase in organic matter in the soil, and almost immediately you can note a better vigor of the trees.

Occasionally some people advocate letting the alfalfa mat down; that is, doing nothing with it, leave it alone. One of the main objections of this system is that the woody fiber of the old alfalfa gets into the irrigating runways, making it very difficult to practice good irrigation. Our observations lead us to conclude that discing the alfalfa frequently seems to kill the cheat, and the alfalfa which does grow in the orchard becomes green and vigorous. Gradually, we are reducing the amount of seed needed for an orchard, and where a good drill can be used, six pounds of alfalfa drilled in the spring should give a good stand, under average orchard conditions.



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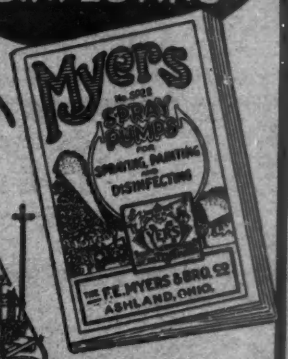

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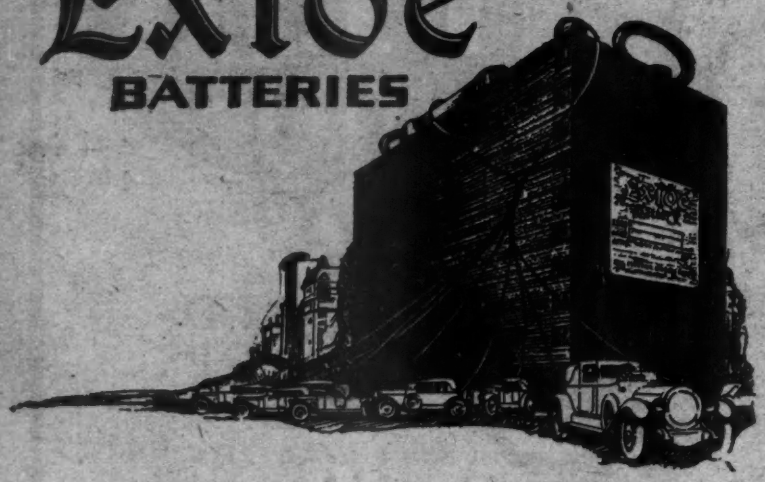

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The Modern California Walnu

By Samuel Adams

THE history of the walnut goes back for many centuries. It was used by the Persians in commerce. The Greeks appreciated it, calling it "Nut of the Gods" and Jupiter's Apron." The term "English Walnut" is something of a misnomer, since it has never been largely known in England. Commerce today receives it as the "California Walnut," for it is there that it attains its highest quality and greatest quantity of production.

The mission fathers probably planted some specimens, but the nut of commerce dates back no farther than 1867, when the soft-shell Santa Barbara was introduced. This was followed in 1871 by several French varieties, and today California produces 97% of the United States crop.

There are a few notable groves in the eastern states, and confidence in the great future of the walnut is based upon its high productivity, great value as a food produce, and the pratically universal fondness for its delicious flavor. Growers with vision look forward to the time when walnuts will be a staple food rather than a dainty additional luxury to daily diet.

Profitable in Eight Years

The walnut bears in from five to twelve years after planting. A survey of 12,000 acres gives an average of eight years before profitable bearing. Meantime the trees can be made to support themselves by the practice of intercropping.

Clean culture with winter cover crops makes a satisfactory method of handling the soil in the grove. Melilotus, clover, purple vetch and horsebeans make good cover crops. Being leguminous, they add nitrogen to the soil and (if the straw and roots are plowed under) improve its mechanical condition. Keep the soil well broken up and in good tilth through the summer.

Sometimes interplanting with deciduous fruits is profitable to the grower for a time, but it is apt to be a detriment to the grove. Where alfalfa is used it should not approach the trees too nearly, and the strip of clean cultivation should be kept well watered.

Dependent upon Water

The furrow system is the usual method of irrigation in California. Sometimes the basin system is used, but in either case the water should penetrate to from five to eight feet below the surface, so that the entire root system is reached. From two to five irrigations are given, about May, June, July and August.

The best practice advocates a dormant irrigation in early January or February. This lessens the chance of winter injury, promotes steady, early growth and is most valuable in years of light rainfall.

Irrigation a week or two before harvest facilitates the opening of the shucks. Fall irrigation, after the leaves are gone, reduces the danger of winter injury. From 12 inches to as high as 30 inches of water per acre are applied through the year.

The Immortal Walnut

The walnut is a veritable Methuselah of trees. "With good cultural care, the older the walnut tree becomes, the greater its productivity." Fifty-year-old trees in California are giving bounteous crops. In the old world some have been producing for literally hundreds of years.

Some California groves produce yearly over a ton of marketable nuts to the acre. An average of 500 po per acre for trees from seven twelve years, and 949 pounds for t over 12 years, was established by among growers. Many groves y over 1,000 pounds per acre. A business estimate would be from to 1,200 pounds per year, per acre, mature trees.

Nursery-Grafted Trees

Nursery-grafted trees upon kn stock is the best method of propa tion. Varieties of black walnut exclusively used for this purpose. T stock is grown from seed in the nu ery for one year. Then, just bef the leaves appear in spring, it grafted to the desired variety of C ifornia walnut.

A short whip is most used, and union is made fast with cotton twine or raffia. Hot wax is applied the graft and scion tip to prevent dr ing out. A further precaution is c ering with paper and hilling up w soil. The young trees are trained stakes in the nursery and one y after grafting are ready to tra plant. For the past two years demand for these has exceeded supply, making it profitable for nu erymen to grow them.

The Best Root-Stocks

The black walnut is the most vig ous, healthy and satisfactory ro stock. Northern California bla (Juglans Hindsii) is the favorite. produces a good tree even under a verse conditions of soil and moistu Southern California black and East black are less desirable. Some adv cate the Royal Hybrid. The Para Hybrid (a first-generation cross b tween the Persian walnut and any the blacks) is unsurpassed in its m its as a root-stock. The difficulty obtaining it prevents its being larg used.

Nuts All Soft Shelled

The original hard-shelled plantin have been superseded by the San Barbara soft shell, and lately b budded varieties of this. Of thes the Placentia is the most popular, b Eureka has been a favorite since recent introduction.

The nut of Placentia is thin shelle with plump meat of highest quali and exquisite flavor. The meat r high in proportion to the nut weigh Easily propagated, vigorous, pre cious and productive, it is perhaps the best variety for southern California.

Eureka is large, oblong, with at tractive meat of highest quality. It i slow bearing in the south, but a heav yielder in maturity. It blooms lat and ripens early, and is thus fitted f northern planting. It is general healthy and vigorous. Its tendency t form imperfectly-developed meats overcome by an extra irrigation in lat August or September.

The Prolific, Chase, El Monte, Co cord, Neff, Payne, and the French v rieties Franquette and Mayette, a producing profitably in various se tions. Each has some special meri and all are good commercial nuts.

Choice of Location

Although the walnut can be gro on light soils with silt or loam su soils, it prefers a favorable clima with heavier loams and much hum An underlying layer of hardpan or fluctuating water table spells a shor lived grove. Irrigation is general necessary, and good drainage is esse tial.

A long growing season, mild w

Our Attractive Walnut Cover

We are indebted to the California Walnut Growers' Association for the unusually beautiful and attractive cover design of this issue, and the data for this article.

It is a great pleasure for us to show our readers the California Walnut in this four-color picture, as well as to tell something regarding the development of the walnut industry.

ters and relatively high humidity are ideal for walnut planting. The industry is spreading inland, and varieties are being developed to suit these sections. Inland groves are less subject to blight than those of the coast.

No grove is more beautiful than the noble, tall and wide-spreading walnut. Planting 60 feet apart each way insures large bearing surface and plenty of sunshine. It may be profitable to interplant a permanent grove of late bearing varieties with earlier bearers. Some even plant the strip between the permanent rows with trees 30 feet apart. This taxes the strength of the soil, and, worst of all, few growers have the courage to take out the fillers at the proper time.

Pruning the Walnut

Experiments in all known types of pruning are being carried out by the Field Department of the California Walnut Growers Association. At present little is done save to thin sufficiently to let in sunshine and to remove the low-growing branches that interfere with cultivation.

How I Kill Mice

By J. K. M.

NEARLY every horticultural or agricultural paper that I pick up I see something regarding damages from mice. I've never known of any one using a plan like my own. From the shop I have quantities of cuttings from 1x6 pine. I take these and cut them to 6-inch lengths (1x6x6) paint a bright red. To these with a 1-inch wire nail I fasten a "hold fast" mouse trap. I buy these traps in boxes at the hardware stores for about 40c per dozen and paint them red. Don't buy the kind offered by the "bushel" for they are seconds and many of them are not reliable.

For the orchard I place one of these boards and traps near each tree. For the cellar crib or other places I place them where needed. I carry in my pocket a small snuff box loaded with small cubes of toasted cheese (about ¼ inch). When near one of the traps the red will likely attract attention. If there is a mouse I throw it out, put on new bait and reset.

I've never kept account of how many mice I've caught in a year but know that since adopting this simple plan I've had but little loss from mice. Not a single tree has been injured. Mice seem to be getting scarce hereabouts. Last Saturday I threw out two that would soon have been feeding a new family each. I do not unless for some special reason make a systematic examination of traps. I just examine the red spots as I run across them. I thought that next winter I would add a cover to the boards used in the orchard, but don't know that it would be of any great benefit.

Grape Growers Meet

By W. H. Asbury

THE annual convention of the National Grape Growers' Association was held at North East, Pa., January 24-25 and participated in by delegates from Michigan, New York, Pennsylvania, Ohio, Canada and by many visitors from nearby and distant fruit belts.

Many interesting features were discussed, and resolutions passed which will be of great benefit to the individual grower as well as to members of the association.

Tuesday evening was given over entirely to Professors Gladwin and Hartzell of the Fredonia Experimental Station, Fredonia, N. Y.

The ballot resulted in the election of the following officers for 1922: President, Geo. W. Blaine, of the Chautauqua & Lake Erie Fruit Growers' Association, North East, Pa.; secretary, W. H. Asbury, secretary-manager the Western Reserve Farmers' Co-operative Association, Unionville, O.; treasurer, Leo E. Prater, secretary Paw Paw Co-operative Association, Paw Paw, Mich.

The place of meeting for 1923 was left to the executive committee.

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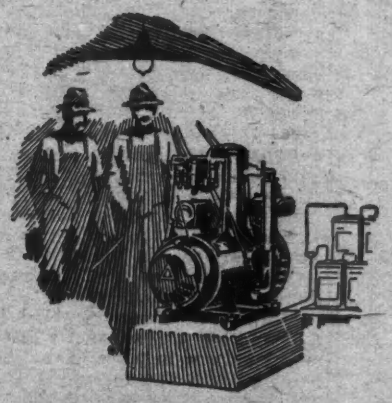

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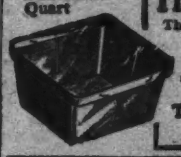

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GOODYEAR

SPRAY HOSE

New Points on Bridge Grafting

By R. H. White

I WAS very interested in the article by W. C. Dutton on "Bridge Grafting." In two or three months this will be a vital subject to numerous growers who at the present moment are blissfully unaware of the damage which is now taking place, and who will this spring be attempting their first job of bridge grafting.

As this is a very delicate piece of work, though simple and successful if done just right, I have enclosed some sketches which perhaps you would like to use as further explanation of Mr. Dutton's description.

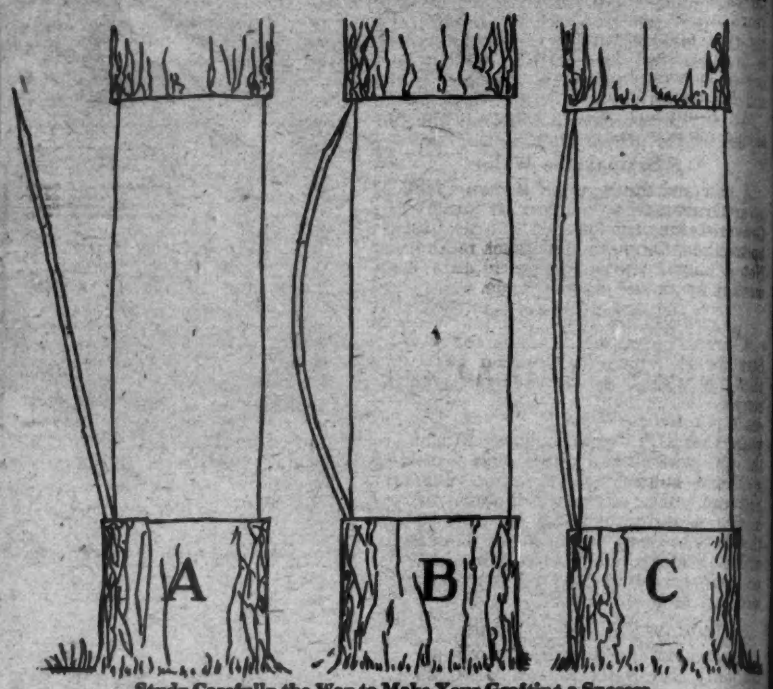
It is very easy for a person who has never seen a process performed to misunderstand some detail of even a well-written description, and this is a job which has got to be done in a hurry, as there are only a few days when the sap is right for a good catch.

In explanation of the cuts: Insert the cion at the bottom, just as at A, then holding the cion against the tree at the bottom to prevent its splitting the bark, use the other hand to bend and insert it at the top, as at B, and when pushed in snugly it will straighten out, as at C, and is then ready for immediate waxing.

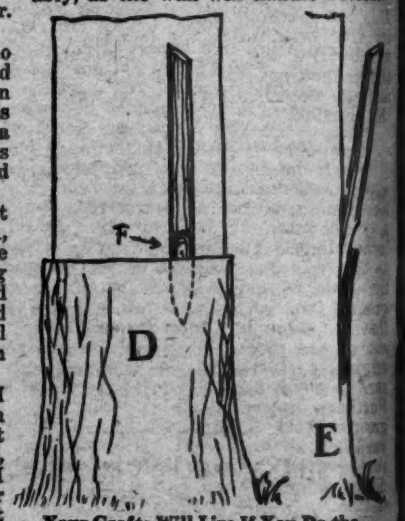
I often cut cions from the tree I am working on, so as to get them sharpened and in place in the shortest possible time, and for ordinary work, where mice have girdled the tree, I want a cion that is slightly smaller than a pencil and, of course, of last year's growth only.

The figures D and E show full-sized detail, and the portion of exposed wood on the cion at F must be well covered with wax. I would cut all the buds off the cion before putting it in place, as otherwise they will be sure to grow, taking the strength which should be fed into the tree.

As to the time for doing the work, I watch the trees and begin at once when I can see the first real swelling of buds, taking a warm day preferably, as the wax will handle better.



Study Carefully the Way to Make Your Grafting a Success



Your Grafts Will Live If You Do the Work Properly

Mice Have Been at Work

RODENTS, chiefly meadow and pine mice, began their fruit-tree work early last fall, according to an investigation now being conducted by the Biological Survey, United States Department of Agriculture, and are levying a heavy toll upon the orchards.

More than $1,000,000 worth of fruit trees, it is estimated, were destroyed in New England alone by field mice during the winter of 1919-20, while the damage this winter promises to be heavy.

A representative of the department has been making an extended trip, conferring with extension service workers, investigating conditions and placing in the possession of local authorities the department's suggestions for dealing with the menace.

In Maine, for instance, it has been found that next to severe winter weather, mice have inflicted more damage to orchards than any other agency. Ten years ago there were, according to the census, 4,521,739 apple trees in Maine orchards, while in 1920 there were 3,345,521.

In New Hampshire mice have given the apple industry a severe setback during the past decade. In Massachusetts orchardists reported losses two years ago from mice totaling $125,000, this amount not covering the entire loss, because some orchardists did not report. In one Connecticut orchard of more than 350 acres, damage by rodents during the winter of 1919-20 is conservatively placed at $10,000.

The mice, of these two varieties, strip the bark from the trees above ground and from their roots below the surface. An active campaign is under way in many sections which, if continued, will help check the rodents' depredations.

Some New Varieties

By James W. Robinson

OUR readers will all enjoy reading of the results of the experiments of James W. Robinson of Sebastopol, Calif., a young man who, with but little capital, has put in the last 16 years in—as he expresses it—"keeping my eyes open and experimenting." It is to just such people that many of our most valuable discoveries in new and improved fruits are owing.

Mr. Robinson reports the following among his new and improved fruits:

Sebastopol Apple

A new red apple, which follows just after Gravenstein, ripening as the last Gravensteins are picked. Like the Spitzenberg in shape, but much redder. Not a long keeper, but useful on the market as an in-between apple.

Improved Muir Peach

A cross between the Muir and the Strawberry, much juicier and better than the old Muir, more pointed and somewhat redder. Among several seeds planted this one fruited the first year, which is very unusual. All but this one was discarded and the chosen specimen planted at my home in Sebastopol. It has borne annually, even having a light crop last year, when the peach crop thereabouts was an entire failure. A plate of these peaches exhibited at the county fair last fall took first prize.

Improved Crawford Peach

Resembles the Late Crawford, and the only difference seems to be that the pit does not split, and it is a few days later. This is from a chance seedling that came up and was allowed to fruit.

Mammoth Bartlett Pear

A freak for which I take no credit. One hundred trees were set out, all budded from the same parent tree. This one matured into a larger, thriftier tree with immense fruits, 40 of which fill a lug box. They ripen at the same time, have the same flavor and are apparently the same pear as the Bartlett except for size.

Three-in-One Apple Tree

This is merely a little pastime for anyone. Take a scion about a foot long from a Northern Spy, graft on it a small piece of root not over two inches long. The smaller the better, as this will have a tendency to force the scion to root. Leave it in the ground two years, and you will find that the scion has forced small roots out on the sides. Cut off the root originally grafted on the scion, and be sure to get it all. Now plant back the Northern Spy rooted scion and let it grow a year. Then bud it to as many varieties as you wish. I budded on three varieties, each limb bearing a different apple, and I call it the Three-in-One.

The Sebastopol apple, Improved Muir and Improved Crawford peaches were sent as samples to the Department of Agriculture at Washington, D. C., and registered there as new fruits. I intend sending samples of the pear this coming season.

Contest for Students

AN INTERESTING student judging contest was conducted at the Rochester meeting of the New York State Horticultural Society. Students from Cornell and Syracuse were pitted against each other in the correct identification and placing of 15 classes of apples, each class consisting of three plates.

Cornell was coached by L. H. MacDaniels and F. S. Howlett of the Pomology Department of New York College of Agriculture, and Syracuse by Irving B. Stafford of the Horticultural Department of Syracuse University.

The contest was excitingly close, Syracuse winning by only 70 points out of a possible total team score of 9,000 points. It is planned to make this contest an annual affair.

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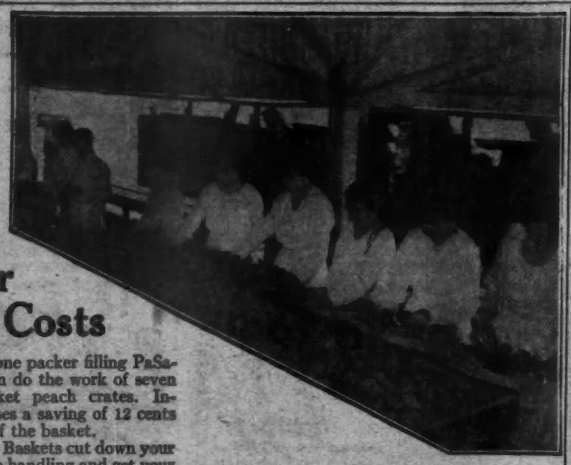

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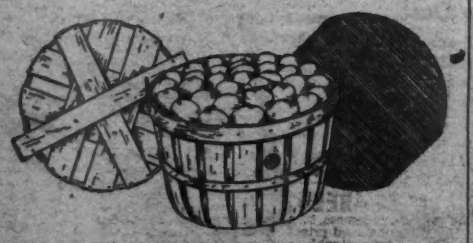

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Grafting Nut Trees

By W. C. Deming

THOSE who expect to try nut-tree grafting this spring should be making some simple preparations.

The Scions—These should be cut while perfectly dormant before the buds have begun to swell. It is generally stated that they should be cut when the wood is not frozen. Plump terminal twigs of last season's growth are the best, though it is possible to get success with wood two years old or even older.

On old trees the terminal growth is often short and slight. With the English walnut it is apt to be very pithy. Such scions are more difficult to succeed with than large, plump scions from vigorously-growing trees. For convenience in handling scions should not be over a foot long. One expert grafter always paints the cut ends of the scions with melted grafting wax.

As soon as cut the scions should be stored in a cold place, where they will not dry out nor be too wet. Packing in clean, only slightly moist, sawdust, sand or moss in a paper-lined box and keeping in cold storage is the ideal way, but they will keep very well in a cold cellar even if simply laid on the earth floor and covered with dead leaves. Or they may be wrapped in a clean cloth and buried under ground on the north side of a building.

The Stocks—The stocks should be sawed off while still dormant a few inches above the point for grafting. They should not be over three inches in diameter at this point and, for the inexperienced, less than two inches is better.

The stocks are to be freshly cut back to the right point at the time of grafting.

The Saw—This should have rather fine teeth, so as to injure the bark and wood as little as possible. A small carpenter's saw is as good as any.

The Pruning Shears—These are convenient for cutting the scions and also stocks not over an inch in diameter. The hand-forged French shears are by far the best and may be handed down from father to son, but they are quite expensive. They are sold by J. M. Thorburn & Co., 55 Barclay St., New York City.

The Knife—It is important that this should be a stout one with a straight edge and a handle that gives a good grip. It is absolutely essential for good work that the knife should be kept at razor-like sharpness. A fine pocket oil stone is a good thing to have along, and it should be frequently used. Once a good edge is secured on a good knife, it may be kept so by frequently whetting it on the edge of a piece of dry wood, such as the edge or handle of the box in which the scions and tools may be carried. A good and inexpensive grafting knife is made by the Holley Mfg. Co., Lakeville, Ct. It is simply a straight blade firmly set in a round wooden handle.

The Grafting Wax—Such excellent results have been had with simple paraffine, sold at grocery stores as Parawax that I expect to use it this year, and I am inclined to recommend it to others. One of the best formulas for grafting wax is the following: Two pounds beeswax, 4 pounds rosin, ½ pint linseed oil and 2 tablespoonfuls of lamp black. Melt together over a slow fire, keeping well stirred. A smaller quantity may be made in the same proportions.

The Wax Pot—Take an old pail, such as a four-quart lard pail, and punch in the sides a number of holes two or three inches from the bottom. Put an inch of sand in the pail and imbed in the center of the sand an alcohol lamp or old bicycle oil lamp. In the top of the pail fit an old saucepan. The wax may be melted in the saucepan over the stove and then kept melted at just about the right temperature for use by setting the saucepan in the lard pail with the little lamp lighted under it. A small paint brush is kept in the melted wax for painting over the grafts.

The Tieing—Raffia makes the best material for tieing the grafts, though any soft string or yarn, strips of cloth or waxed muslin may be used. Raffia may be bought from most seedsmen.

Paper Bags—These are often used to tie over the completed graft for protecting, but painting the whole scion with wax seems to work equally well.

Selecting Our Own Trees

By Lewis Hillara

ARE we going to inform ourselves as to the best varieties for our climate and be ready for the fruit tree man when he comes, or are we going to let him do most of the selecting for us?

It will make a lot of difference in the resulting orchard, for it is seldom that the agent will sell the standard, tested varieties if he can induce the buyer to invest in new varieties that sell at a special price and a special commission to him. This is business to him. His nursery wants to introduce its new varieties and is willing to pay him well to give them his special attention, and a buyer is supposed to know what he wants, and if he does not it is up to the agent to tell him according to his idea, which is pretty apt to be in accord with his interest. Then very often the agent knows little about the trees outside what he reads in his book of instructions and descriptions.

In the first place, we must remember that there are few varieties of any fruit that is universally adapted. If we would have a good selection we will have to find out what trees do best with us. I have seen the Baldwin apple approved for planting quite often, but the Baldwin is never planted here to my knowledge, and it is not a tree for this part of the country.

It is the same with other fruits. A strawberry that will thrive on a sandy sail will prove a failure on a clay soil, and I have planted the Montmorency cherry where it would bear but little from year to year, while here it bears good crops and seldom fails.

Determine Best Varieties

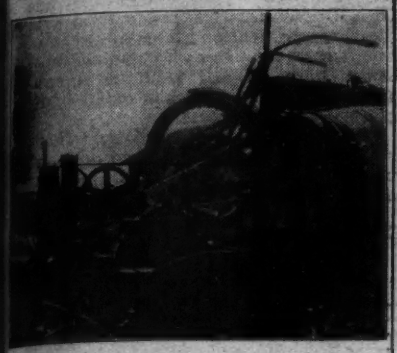
In every part of the country successful orchards can be found, and it will pay the man intending to plant an orchard to sek out these orchards and find out what are the best varieties. By comparing notes from several and then getting more information from the county agent or experiment station the farmer or fruit grower is not at the mercy of the agent, and when that gentleman comes he can be given a list of the varieties wanted, and if in addition a few trees of the special introductions of his company are desired, well and good. New things are often of value, but they cannot take the place of the old standard sorts. It takes too long to test them to take the risk of using them for the main part of the planting.

The agent will advise using the best stock, and in this he is right, but I make one exception to his rule. I prefer to use the first-class stock of one-year size rather than older stock, for such stock will be genuinely first class, while often the larger trees are older in proportion and may have had trees from the block sold as one-year stock. A one-year four-foot tree is better than a two-year four-foot tree. Then we should insist on evenly-balanced roots, if we can do so, for this is very important to the future growth of the tree.

Motorcycle Sprayer

By R. B. Cruickshanks, Ohio

HOW one man in Ohio has solved the problem of power on the farm is depicted in the accompanying cut. This man, a country preacher, county Y. M. C. A. worker, boys' and girls' club leader, farmer and general all-around hustler, has geared an old



Motorcycle Gives Power for Sprayer

motorcycle to a pump and barrel. With it he sprays his fruit trees, runs the washing machine and churn, saws wood and pumps water for the house and for washing his automobile. Needless to say, this fellow gets along.

Transportation News

By W. D. Mumby
Editor of Transportation Dept.

THE United States Supreme Court held in the case of New York Central Railroad vs. Whitney Company that the consignee is liable for undercharges in practically all cases including consigned shipments. Shippers should take advantage of Section 7 of the new bill of lading, "where the freight charges are to be paid and borne by the consignee," by signing the stipulation on the face of the bill of lading.

Claims for Market Decline

Shippers and receivers should not overlook filing claims for loss of market decline on shipments delayed beyond reasonable or advertised schedules. The Supreme Court of the United States held carriers liable for loss in market during delay in transit in the Peninsula Produce Exchange vs. N. Y., P. & N. Railroad. Any of our readers who are encountering difficulties in adjustment of these claims should get in touch with this department.

Liability for Damage After Arrival at Destination

The United States Supreme Court rendered a decision in Michigan Central Railroad Co. vs. Mark Owen Company, holding carriers liable for loss, occurring between the time door is opened and unloading, commenced and expiration of free times authorized by tariff. This decision should settle the question of liability for damage occurring after the arrival and placement at destination.

Bill of Lading Limitation

Shippers should endeavor to file all claims for loss on damages within the six months provision as provided for in the bill of lading. In so doing it may avoid trouble. There are some exceptions, also court decisions on both sides.

Our readers should take advantage of our Transportation Department. We are in a position to properly audit freight bills and handle loss and damage claims, having recently made arrangements with an Industrial Traffic Manager, who has had many years' experience handling perishable freight claims. A small commission is charged for the collecting of loss and damage and overcharge claims, based on the amount collected. NO CHARGE is made unless settlements are affected.

Shippers encountering difficulty in collection of their claims should send them to this department.

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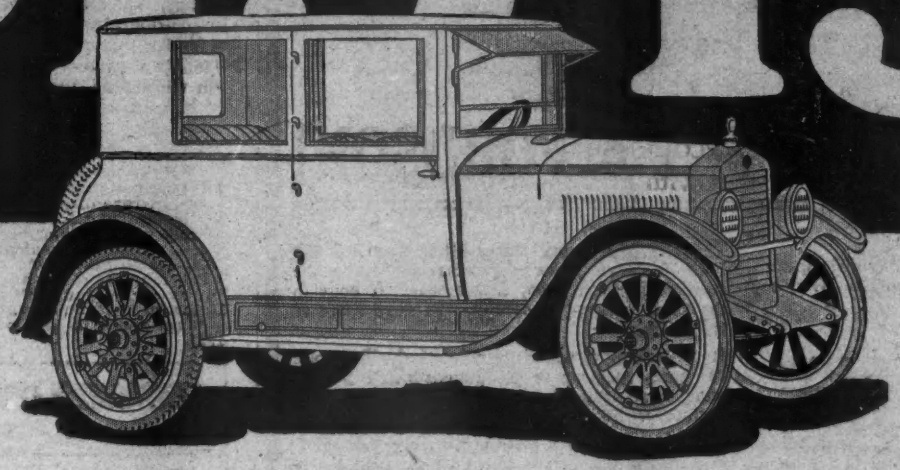

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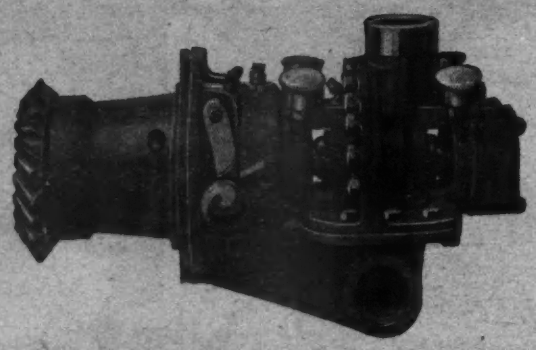

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Fertilizing the Apple Orchard

By Ove F. Jensen

SO LONG as the fruit grower says, "I'm not sure just what fertilizer to use; I guess I won't use any," he is sacrificing profits that he ought to have. Fortunately, however, this is not the attitude held by all fruit growers. In particular, it does not represent a group of growers in Michigan who are actively co-operating with their experiment station to solve some of their problems, relating not only to fertility, but also to pruning, spraying, cover crops, etc. This co-operation is the result of taking these problems directly to the experiment station.

At meetings during the farmers' week at the college in the early part of 1921 some of the more progressive fruit growers reported their practical experiences with commercial fertilizers on apples, peaches, grapes and small fruits.

These experiences, while encouraging, were incomplete and showed the necessity for gaining more information under carefully-controlled conditions. Committees were appointed to work with the experiment station in planning experiments to fit their needs. This work has come under the direction of Professor C. F. Halligan and Professor Roy E. Marshall. A report on the progress of this work was made at a recent meeting of the Michigan Horticultural Society. The results reported are worthy of study, not alone by Michigan growers, but by other fruit growers who may be confronted with similar problems.

Some Results Secured

Professor Marshall secured a net profit of $7.01 per tree from the use of a complete fertilizer in a Ben Davis apple orchard. County Agent Kraker of Benzie County, Michigan, showed a net profit of $163.50 per acre from fertilizing apple trees with nitrate of soda and acid phosphate.

Such results indicate that the question of nutrition is as important in the case of fruits as with the cereals, truck crops and potatoes, on which crops large quantities of fertilizer are now used. Much of the fruit in western Michigan is being grown on land that has produced fruit or other crops for well over fifty years. The raising of fruit, just as the growing of most farm crops, is influenced by the elements of plant food, and the response obtained from manure or fertilizers is often remarkable and highly profitable.

The question, therefore, of what fertilizer to use on fruit is an extremely important one. Readers of the AMERICAN FRUIT GROWER MAGAZINE are already familiar with the Ohio experiments in southeastern Ohio, where the use of a complete fertilizer high in nitrogen, on a sod orchard, gave an increase of 80 barrels of opples per acre.

For some time it was thought that the e results could be secured only on run-down orchards and on the poorer soils. Recent experiences of fruit growers on the richer soils in Ohio are disproving this assumption. Professor Cruikshank of Ohio State University recently made this statement to an assembly of fruit growers: "I have yet to see an orchard in sod that will not respond to available nitrogen."

The profitableness of proper fertilization was demonstrated in a test on a Ben Davis apple orchard near Eaton Rapids, Mich., by the Michigan Experiment Station. The orchard consisted of 35-year-old trees—a typical neglected orchard. The soil was light, unproductive and poorly covered with grass. Work to put the orchard in shape was begun in 1920. Fertilizer treatments were made, but there were no differences in the yields, all of which were negligible. In 1921 the fertilizers were applied again, and one more plot was added, in which the trees received fertilizer for the first time. The yield, cost per tree and net profit per tree for the various treatments are shown on the table.

Note that the combination of ammonium sulfate, acid phosphate and muriate of potash gave the largest and also the most profitable increase —343 pounds of apples per tree over no treatment. This treatment is the equivalent of about 20 pounds per tree of a 5-8-7 fertilizer.

The story of this experiment is not all told by the yield. Remarkable differences were observed in the set of fruit, twig development, size and color of fruit, etc. These observations, as given by Professor Marshall, are as follows:

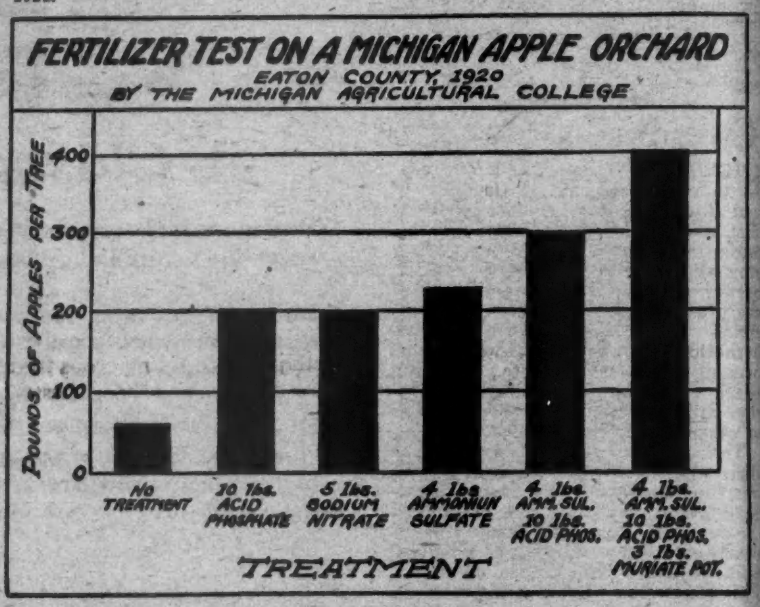
Blossoming.—No difference between the various treatments.

Set of Fruit.—All fertilized trees set heavier with fruit. Acid phosphate

Table Showing Yield, Cost and Net Profit

Treatment	Yield Per Tree Lbs.	Cost Per Tree Cents	Net Profit Per Tree
4 lbs. ammonium sulfate	231	28	$3.62
5 lbs. nitrate of soda	201	30	2.87
No treatment	60	--	----
10 lbs. acid phosphate	209	25	3.10
4 lbs. ammonium sulfate 10 lbs. acid phosphate 3 lbs. muriate of potash	403	71	7.01
*4 lbs. ammonium sulfate 10 lbs. acid phosphate	300	27	5.10

*Treatment in 1921 only. All other plots received applications in 1920 and 1921.



alone or in combination caused more fruit to set than nitrate of soda or sulfate of ammonia.

Percent of Drops.—Check plot had twice as many "drops" as any of the fertilized plots.

Foliage and Twig Development.—Foliage of all fertilized trees, except acid phosphate, was darker green and more dense. Differences were recognized early in the season and became more marked as the season advanced. Twig growth was greatest in the complete-fertilizer plot. Careful measurements showed the following average growth for the various treatments:

No treatment	2.9 inches
Phosphorus alone	2.9 inches
Nitrogen alone	5.0 inches
Nitrogen and phosphorus	7.0 inches
Nitrogen, phosphorus and potassium	9.8 inches

Disease Resistance.—Apple scab was present on all trees, but there was much less on any of the fertilized trees than on the unfertilized trees. There was a particularly noticeable difference between the complete fertilizer and the unfertilized plots.

Color of Fruit.—No treatment and acid phosphate plots produced dark red fruit. On all other fertilized plots the fruit had less color. Potash had apparently no effect on color.

Size of Fruit.—No-treatment and acid phosphate plots bore fruit of small size. The percents of apples from each plot that were above 2½ inches in size were as follows:

Acid phosphate alone, 39 percent above 2½ inches.

No treatment, 51 percent above 2½ inches.

Nitrate or soda and sulfate of potash, 64 percent above 2½ inches.

Complete fert., 71 percent above 2½ inches.

Liming.—Two tons of limestone per acre applied in 1920 across one-half of all of the plots has given no noticeable results.

Curculios—Danger

FIELD experiments and observations of the Federal Government and State Laboratory officials shows that the peach belt of Georgia is still harboring many adult curculios. Jarring experiments last fall, before the beetles went into hibernation, revealed the presence of many "left-over" curculios. These insects are now in hibernation in woodlands, wastelands, pruning piles, rubbish, etc., adjoining peach orchards, and in dense vegetation along fence rows, terrace rows or other places in the orchard.

These adult beetles will again make their appearance about peach-blooming time, to await the attack on the 1922 peach crop. In order to avoid the possible occurrence of a "wormy" peach crop during the coming season, each grower is advised to undertake a thorough clean-up, burning, and orchard sanitation campaign during the winter or early spring, to destroy as many of the hibernating beetles as possible.

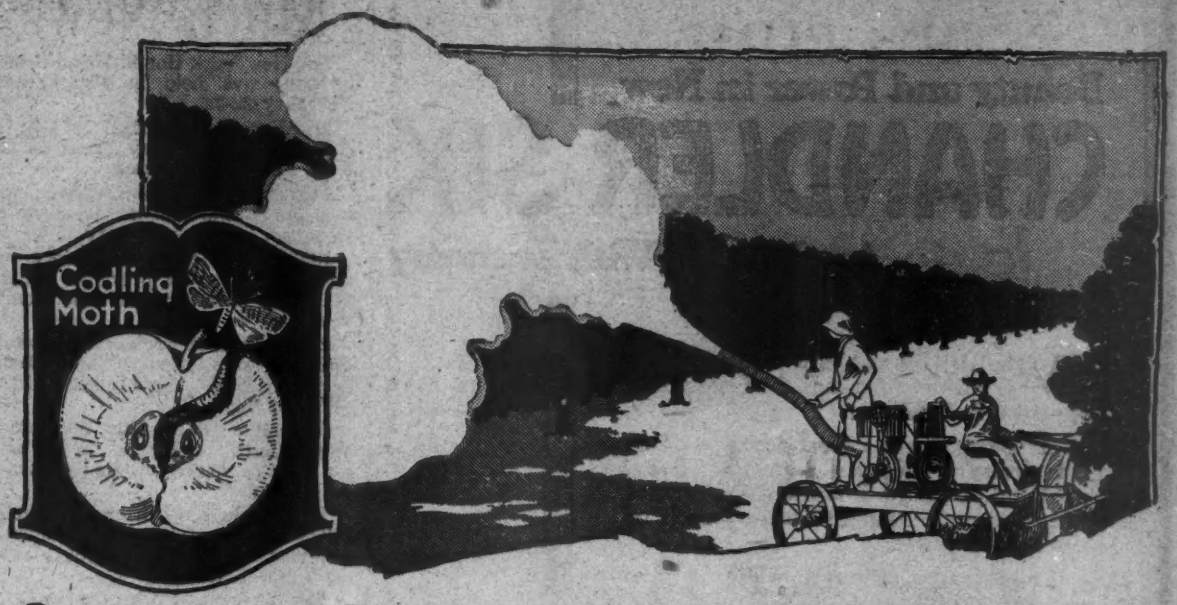
Get Busy Now

Orchardists are urged to take advantage of the first suitable weather for this burning and clean-up work, as usually there are but few days during the winter months when this work can be properly done. A sweeping fire that will burn the rubbish and undergrowth in woodlands and wastelands close to the ground is very necessary in order to destroy the curculios, and a time should be selected for this work after a dry period, so that the material will burn properly. Allow the fire to burn two or three hundred yards back in all woodlands and wastelands near peach orchards; and, if there are no objections, let the fire sweep all the way through such lands.

Attention is called to the fact that the adult curculios also hibernate in vegetation along fence rows, terrace rows, and under rubbish, pruning piles, etc. These should also be thoroughly cleaned up or burned over before spring. If the orchard proper is not clean, it would probably be advisable to turn under the vegetation as soon as possible, to destroy hibernating quarters near the trees.

Growers are cautioned to have sufficient supervision and labor present during the burning to handle the fire. The proper precautions should be taken to keep the fire from damaging telegraph and telephone poles, fences and fence posts, and all buildings.

For further information on the clean-up campaign, phone or write the Peach Pest Laboratory at Fort Valley, Ga.



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Dusting with Dosch Dusts is profit insurance

Professor H. H. Whetzel, plant pathologist of Cornell University, says: "An apple orchard dusted but three times, showed 91% absolutely scab-free fruits as against 97.5% scabby on undusted trees of the same variety in the same orchard."

Dusting with Dosch Dusts has become recognized by growers and scientific men as being the easiest, most inexpensive and most effective method of protecting crops from fungous diseases and insect pests.

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—because Dosch Dusting Machinery is light and simple in construction. A light rig can go where a heavy rig would be mired. There is no intricate machinery. There is no water to haul.

Dusting is Most Inexpensive

—because, aside from the actual saving in cost of equipment, more acreage can be covered in a shorter time—with *one-fifth* the usual labor.

Dusting is More Effective

—because the minute particles of Dosch Dust can penetrate out-of-the-way places on the crop and foliage—that would remain untouched by other means. This extra fineness of Dosch Dusts and the special "sticker" which they contain mean that Dosch Dusts will go everywhere—and stick.

Dosch Dusts will conquer Scab, Codling Moth on Apples, Brown Rot on Stone Fruit, Plum Curculio, Black Rot on Grapes—as well as other Diseases and Insects.

The Dosch Research Department, composed of prominent plant-experts will send you Bulletins (results of actual experience) explaining the protection of any crop. Write this Department about your trouble.

Ask particularly about Prof. Sanders' new bulletin on "Dusting and Spraying the Apple".

See the nearest dealer who sells Dosch Dusts and Dusting Machinery, or write us for his name and address.

Dosch Orchard Duster with Delco Engine

Special Offer—DOSCH Garden Duster and one pound of DUST $6 for vegetable and flower dusting

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1¼ H-P	$35.50
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WHEREVER the new Chandler Six is shown a verdict of warmest approval is registered.

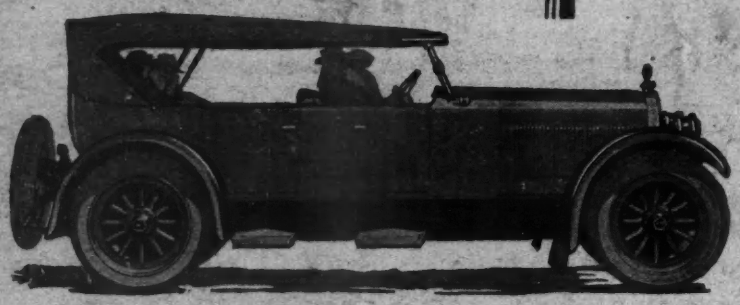
This car marks a great advance, since it realizes the long sought ideal of a beautiful and powerful medium of individual transportation brought within reach of the modest purse.

In all that an automobile should have—unstinted power, rugged durability, velvety riding, ample safety factors, smartness of line and beauty of finish, the Chandler Six meets every test. It will render splendid service and still have style five years from now.

It is equally the car for the practical man, seeking only sound service, and for the woman of taste who looks to the art of things.

$1595 F. O. B. Cleveland

The Price That Scraps Previous Motor Car Values



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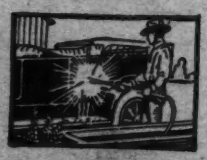
THE STANDARD SPRAY PUMP does better work—more work—quicker work—less expensive work—yet it costs less than any other good spray pump! It is small, yet it throws a stream 30 feet—sprays the tallest fruit tree from the ground. Use it for spraying fruit trees, vines, vegetables; for whitewashing, disinfecting, washing windows and the motor car, for extinguishing fires, for spraying live stock, etc., etc. You'll find something every day for it to do.



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Much News In Little Space

The New York Horticultural Society meeting was held in Poughkeepsie February 22-24.

Michigan Horticultural Society has elected George Hawley, president, and T. A. Farrand, Secretary.

Florida banana growers have organized for mutual benefit. W. E. Bolles, Oldsmar, Fla., is Secretary.

Idaho Horticultural Society will have J. P. Gray as president and Lee Truax as secretary for the coming year.

The American Fruit and Vegetable Shippers Association has appointed as secretary E. S. Briggs to succeed Robert Cumming.

Beginning Jan. 1, 1922, all fruit entering Canada and grown in this country must be marked on the box "Grown in U. S. A."

Keep a close watch on your freight bills. Transportation taxes cannot be assessed on any movement starting after Jan. 1, 1922.

The Georgia Fruit Exchange selected the following officers for 1922: W. B. Hunter, president, and J. G. Carlisle, secretary-treasurer.

Growers of Spokane, Wash., are urging that apple packing be taught in the public schools, so that experienced packers may be available when needed.

E. N. Plank of Arkansas has purchased 200 acres near Joplin and will put the entire tract in fruit, beginning with 50 to 100 acres of strawberries.

The New Jersey Fruit Growers Co-operative Association will handle only peaches in 1922 and is now making arrangements to cover the entire state.

At the 29th annual meeting of the West Virginia Horticultural Society, William Farris was made president, and H. L. Crane was re-elected secretary.

The Kentucky Horticultural Society, at their February meeting, re-elected W. H. Stiles as president, and Ben E. Niles will be secretary for the coming year.

The California Grape Growers, at the meeting held in San Francisco in February, elected E. M. Sheehan president and manager, and H. F. Stoll, secretary.

A movement has been launched to unite growers of Oregon, Washington, Idaho, Montana and British Columbia into a revived Association of Northwestern Growers.

At the meeting of the Pomological and Fruit Growing Society of the Province of Quebec, J. R. Marshall was elected president, and Walter Reid secretary-treasurer.

A storage plant for the Martinsburg, W. Va., Fruit Exchange, will be built immediately upon a plot of ground in the city adjoining the Baltimore & Ohio tracks.

The midwinter meeting of the Michigan Horticultural Society will be held at Coloma, Mich., on March 1-3. A program of unusual merit will make the three days interesting.

The Canadian Fruit Conference was held in Ottawa on February 22. It was attended by government officials engaged in the work and by the leaders of the fruit and produce men.

A Florida woman is making beautiful necklaces of orange and grapefruit seed. This brings these fruits into the class of the packer's famous pig, of which no part was lost but the squeal.

63,200 acres have been planted to Thompson Seedless grapes in California since 1919. By 1924-25 it is estimated that the present acreage of this variety will produce 132,207 tons of grapes.

The Antler Growers Co-operative Association of Oklahoma was effected with more than 50 charter members. Officers elected were G. M. Byers, president, and G. T. Johnson, secretary-treasurer.

Missouri Horticultural Society plans to plant 100,000 trees and 1,000,000 bush fruits annually for the next ten years. Officers for the coming year are Byron Coleman, president, and H. S. Wayman, secretary.

Following a meeting of the directors of the Northwestern Fruit Exchange in Seattle, Wash., J. A. Meade was promoted to the presidency, to succeed W. F. Gwin, resigned. J. Emmet Nester will be secretary.

Every horticultural society should send at least one delegate to the meetings of societies in the neighboring states so that they may bring back the message from prominent and active horticulturists in other sections.

South Missouri is actively promoting its grape industry. Experts estimate that the Ozark region has a potential annual output of $20,000,000. More than 40,000 plants will be set this spring by the Jasper County Fruit Growers' Association.

Dr. S. W. Fletcher of the Pennsylvania Agricultural College predicts that within 20 years the Blue Ridge country of Virginia will be the chief apple center of America. He urges conservative planting and co-operative packing and marketing.

It is proposed to establish a chain of pre-cooling warehouses along the east shore of Lake Michigan from Benton Harbor to Traverse City. Last year the fruit deteriorated in transit from heat and drought. With pre-coolers it will be possible to make longer shipments.

The S. S. Texas sailed from San Francisco this past season with 14,024 cases of canned peaches, 16,600 cases of canned pears, 4,989 cases of apricots and 404 cases of plums. On the same day the S. S. Willhilo set sail for New York with 224,000 pounds of dried prunes.

Ascher S. Davis, New York, has developed a new variety of apple—the Winter Blush. He transplanted the seedling in 1913. It fruited in 1919. It resembles Lady Blush, is the size of Greening, has a tart, pleasant flavor like Winter Banana and is a good keeper.

The blackberry growers of Mineola, Texas, have formed an association with the officers of the Mineola Canning Factory and the Chamber of Commerce. A market has been guaranteed the growers for every berry they produce. Large plantings are contemplated.

John F. Deegan, manager for the North American Fruit Exchange, is to be general manager of the reorganized General Sales Agency. He will have charge of the activities of the North American Fruit Exchange, the Mutual Orange Shippers and the California Vegetable Union.

The menace of the peach moth and Japanese beetle was called to the attention of growers by Secretary Taylor of the New Jersey Horticultural Society. He is of opinion that inspection should be more rigid. The moth is hard to poison, and there is need of help in fighting the Japanese beetle.

W. H. Alderman of the Minnesota Department of Horticulture recommends, as excelling anything now raised there, Como gooseberries, Latham raspberries, Underwood and Redwing plums, Zumbra cherries and Duluth ever-bearing strawberries. Minnehaha and Wedge apples are recommended as winter keepers.

Ohio Experiment Station reports bracing wide-spreading branches of large trees with iron rods secured through the limbs with eyebolts. The rods are tied together in the center so that each limb braces the one opposite. In young trees living limbs from each side of a weak center are twined together and later coalesce into one.

The Arcadia, Fla., Citrus Growers' Association is reported to have taken $75,000 worth of frost insurance policy on the groves of members.

Two new types of oranges are being supplied by Prof. Webster of the Riverside, Calif., Experiment Station.

Orchard Heating

(Continued from page 5)

were safe in packing houses. About 25,000 cars of oranges and 9,500 cars of lemons for the entire season is the shipping estimate. This compares with last year's total of 60,000 cars.

Heat Blown Away

A high, freezing wind in Ventura County, home of the Limoneira orchards, blew the heat out of the groves, but the damage in the district was limited to about 5 per cent, almost wholly in unheated orchards.

The Leffingwell Ranch reports a similar cold wind. It cut down some tender shoots, but on the same trees practically all mature lemons and a great many of the blossoms and tender fruits just forming were saved. Here 32 seven- and nine-gallon heaters to the acre were used, and temperatures were raised over 150 acres from 10 to 12 degrees. Nearby Mr. W. C. Scheu and the writer found a lemon grower who declared he never would go to the trouble of heating. From appearances at that time his trees will be several years recovering from the damage they have suffered.

Manager Frank G. Webber of the Sierra Madre-Lamanda Citrus Association, finds 95 to 98 per cent of the fruit saved in some heated groves and 75 per cent in others. He was in the lemon grove of Col. Thomas Lambert of Chicago the morning of the 20th when the outside temperature was 20 degrees and that inside the grove 31 degree, a difference of 11 degrees caused by heating.

At Corona 35 per cent of the lemons and 5 per cent of the oranges were equipped with heaters. The district suffered lighter damage than others.

Orchard Heater Necessary

In his official capacity Mr. Young tests out appliances devised to fight frost, but he finds nothing will take the place of the orchard heater. A device now being developed by a Pomona grower to create an artificial breeze, however, looks promising and, if successful, will be patented in the name of the government for the benefit of all growers.

A zephyr, probably a gust from the Fontana district, blew into Cucumonga for twenty minutes and during that time raised the temperature from 20 to 30 degrees. The mixing of the air strata was the reason.

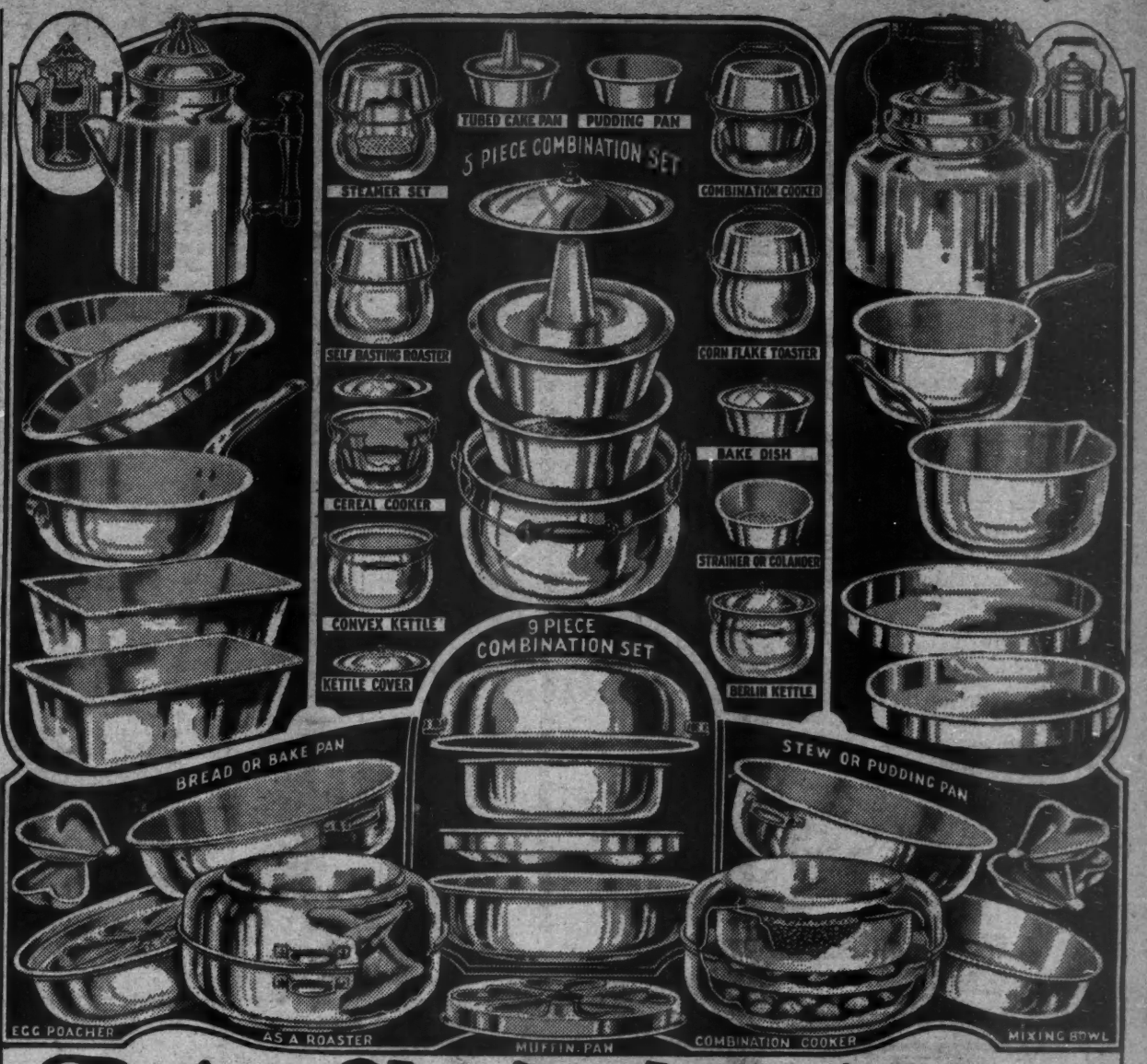
Col. F. P. Firey, postmaster of Pomona; Fred Smith of Pomona, and the East Highland Improvement Association were among those employing the new Scheu "automatic feed" heater. This means steady pressure, so that it needs to be changed only as outside temperatures rise or fall. Furthermore, the heavier oil burns first, leaving the lighter, hotter-burning portions for the early morning cold.

Anti-Smoke Ordinance

Leffingwell Ranch reports considerable difficulty in regulating the sheet iron heaters and prefers the cast iron type. Pomona City has an anti-smoke ordinance. The mayor is reported to have looked about in the early morning and to have decided the smoke had blown over from Upland, so no growers were arrested. To meet the anti-smoke ordinance, growers either installed the new, high-stack heaters, or fitted old-style heaters with stacks by employing special reducers.

With any heater it is essential to keep out water, or the oil will boil over, and there will be no fuel when fuel is needed worst. This is accomplished by using a cap over the stack and by raising the regulator opening about a quarter of an inch so water will flow off the bowl.

In the Pomona district temperatures were raised about three degrees over all groves by the heating that was done, and it has been shown by Mr. Young in actual tests that heaters may actually help the grove to leeward more than the grove in which they are lighted. Hence the necessity for a protective row of heaters on the north and east some distance to windward of the outside rows.



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$1.00 Down

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LIFETIME WARE — DIAMOND BRAND — PURE ALUMINUM

Notice: Some sets offered for sale are made of cheap, soft aluminum which bends easily, dents with every fall or knock and is not durable. The set offered here is made of genuine pure sheet aluminum, heavy gauge and extra hard. Guaranteed "Lifetime Ware."

Everything in the Kitchen of Pure Aluminum—28 Pieces Combination tea kettle and double boiler (3 pieces) 1-quart size, 6 1-4 inch inside, with a double boiler 2-quart capacity; one Colonial design coffee percolator (3 pieces) 2-cup size with welded spout, dome cover, fully polished; one roaster consisting of 9 pieces, measures 10 1-2 inches wide and 6 inches high. These 9 pieces have dozens of different uses, some shown in illustration, including bread or bake pan (7 pint capacity); steep or pudding pan (7 pint capacity); pudding pan or mixing bowl (4 pint capacity); one poacher (5 eggs at a time); muffin pan; biscuit baker with 6 custard cups or jelly moulds; deep locking self-basting roaster, double boiler cereal cooker or triple steamer. The outfit also includes 2 bread pans, 1 lip stew pan (2 quart capacity), 1 lip stew pan (1 1-2 quart capacity), two 9-inch pie plates, two 8 1-2 inch extra deep cake pans; one colander with 9 inch top, 5 1-2 inch bottom and 2 1-4 inch depth (can also be used as a steamer). 5-piece combination set, serving 12 different uses, as shown in illustration, consists of 3 quart convex kettle with cover, 2 quart cake and pudding pan with cake plate; strainer or colander, steeping or whistle about 15 lbs. All pieces (except the pie plates and bread pans) are highly polished, made of genuine pure sheet aluminum, extra hard, absolutely guaranteed for years. Order by No. A67280A. Send $1.00 with order. $1.55 monthly. Price, 28 pieces, $13.90.

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Only $1.00 down brings the set to your home for thirty days' trial. See how it cooks and bakes better than any other kitchen ware, heats quickly, will not crack, chip or peel, polish can't wear off. If not perfectly satisfied, return the set at our expense within 30 days and we will refund your $1 plus any express charges you pay. If satisfied, start making small payments of $1.50 a month until you have paid $13.90 in all. We trust honest people anywhere in the U.S. No discount for cash; nothing extra for credit. No C. O. D.

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Only $1.00 with the coupon brings this 28-piece "Lifetime Ware" Aluminum set on 30 days' trial. Money refunded if not satisfied. Don't miss this slashed price offer. Send coupon now.

Straus & Schram, Dept. 5843 W. 35th St. CHICAGO

Free Bargain Catalog Shows thousands of bargains in furniture, jewelry, carpets, rugs, curtains, silverware, stoves, talking machines, porch and lawn furniture, women's, men's and children's wearing apparel. Send the coupon today—NOW!

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Enclosed find $1.00. This special advertised 28-piece Aluminum Kitchen Set is to have 30 days' trial. If I keep the set I will pay you $1.50 monthly. If not satisfied, I am to return the set within 30 days and you are to refund my money and any freight or express charges I paid.

☐ 28-Piece Aluminum Kitchen Set No. A67280A. $13.90.

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Read the truth about this land of opportunity. Know where to go, what to do. Ignorance means failure. Knowledge brings success.

Florida's big weekly paper states the facts about climate, soil and production. Impartially answers questions. Send 25 cents for trial subscription. 12 big issues.

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THE ORCHARD DISC PLOW

Designed for orchard work; not merely adapted to it.

NO PROJECTING LEVERS. 28" land wheel is the high point on the plow.

Narrow Truck. Discs plow up to trunk of trees, whether throwing to or away from them.

Stays in ground under any conditions.

Great Clearance because of overhead beam construction.

This plow will save more than enough money in one season to pay for the plow.

Write today for full information and prices.

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Ammonia Makes Fruit Buds

Arcadian Sulphate of Ammonia applied about a week before blossom time (100 to 150 pounds per acre) will invigorate the fruit buds and increase the amount of fruit set.

The failure of fruit to set and the early falling of fruit often is due entirely to nitrogen sta vation. In some sections an early application of quickly-available nitrogen has increased the yields of fruit from four to ten times.

ARCADIAN
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Arcadian Sulphate of Ammonia is guaranteed to contain 25¼% of ammonia—(at least ¼ more nitrogen than in any other top-dressing fertilizer). *Arcadian* is the only top-dressing ammoniate that is fine and dry, all soluble, quick acting and non-leaching. It is low in price per unit of actual plant food.

Order now from your fertilizer dealer and write for our free booklets, "Fertilizing the Apple Orchard" and "Fertilization of Peaches."

New York Baltimore The Barrett Company Atlanta Medina, O.

AGRICULTURAL DEPARTMENT

What to Know about Hatching

By C. B. Thomas

THE hatching season is with us again. Even with its perplexities it is the most interesting phase of the poultry business. The appeal made by the little downy creatures is irresistible. Interest in poultry reaches its greatest height at this season.

It is well that hatching is so interesting, for no phase of the industry requires more attention, skill and patience. The modern hatchery is relieving thousands of people from these requirements. While it may be more practical for the backlotter to buy baby chicks, it will pay those who aim to make poultry keeping a business to learn to hatch and rear chicks successfully. This is easily accomplished, because detailed attention and patience are more important than skill. The choice of hatching methods will be determined by individual conditions. If as many as one or two hundred chicks are to be hatched, artificial incubation will prove more practical and profitable.

Artificial Incubation

While we usually try to avoid things artificial, we make an exception in the use of incubators, because of the numerous advantages. In theory the hen is the better method, but in actual practice the incubator is more profitable and practical.

The incubator gives the advantage of early hatching, which is necessary to quantity production and early maturity required for winter laying. The hen will sit according to her desires, not yours, and may quit during a cold night regardless of the value of the eggs under her. It is difficult to find hens that will not break a great many eggs, and many chicks are trampled to death. The incubator can be kept sanitary, free from germs and vermin. While the hen may be kept free from lice, she may be a carrier of disease, and all harbor intestinal parasites.

Since our purpose in keeping poultry is for profit, we must increase the production of our hens. This means less broodiness. As we can hatch more economically with incubators, we want to keep the hens laying. Labor is another important item that determines our profit. To do hen hatching successfully requires considerable expense for equipment also. Coal and kerosene are cheaper fuels for supplying hatching and brooding heat than burning feed in hens for the same purpose. With good, modern equipment there is no excuse for other than good hatches of high vitality.

Kinds of Incubators

There are several types of incubators on the market. Most commercial poultrymen and hatcheries use mammoth machines consisting of several compartments supplied with heat from one source. The beginner will usually find it more practical to buy the smaller-style machines, as they may be used in any kind of room, moved easily and readily sold when larger machines are needed.

The lamp-heated machines are of two general types, known as hot-air and hot-water incubators. In one the heat is radiated from pipes carrying hot air; in the other from hot-water tanks. There are good incubators of both types on the market. Most people seem to prefer the hot-water machines. More important than the type is the quality of the individual machine. Cheap, flimsy incubators are a poor investment. A capacity of two hundred or more eggs is preferred to smaller sizes. They cost less per capacity, save time and labor and use but little more fuel.

Eggs for Hatching

No method of hatching can produce good chicks from inferior eggs. The eggs should be from stock that is healthy and vigorous, representative of the variety. The male is half of the flock and has more influence on the pullets upon which you depend for your profits. Therefore he needs special consideration. He should be prepotent, have plenty of crow, with nerve to back it. The hens should be bright and active, being selected for productive qualities.

The eggs should be normal in size and shape. They are not to be held longer than two weeks. Fresh eggs give best results. Eggs that come by mail may be set at once. They can "rest" in the incubator as well as elsewhere. They never improve with age under any condition. The shells should be of good texture, smooth and free from cracks and thin spots. When eggs are saved for hatching they should be turned daily. Good eggs are the first requisite for good hatches.

Operation of Incubators

March, April and May are the best months for hatching. The lighter varieties, such as Leghorns, may be hatched later than the heavier ones. If hatched earlier than these dates the pullets are likely to lay too early and moult before winter, then loaf until spring. If hatched later they will lack maturity when winter arrives and likely defer laying until spring. Winter eggs bring higher prices.

A clean, well-ventilated cellar is the best place to operate an incubator. If such is not available, they may be operated in the house. An unheated room will give better results. It is advisable to put burlap over the openings used for ventilating the room. This permits free passage of air without drafts. Use the best grade of kerosene obtainable. The manufacturer of the incubator can best instruct you as to the details of using his product. Study the instruction book carefully. Get the machine thoroughly regulated before the eggs are set. Once regulated, do not change the adjustment during that hatch. If temperature fluctuates too much change the flame to get desired results. If through negligence you get a batch of eggs chilled, do not throw them away. They are likely to be still hatchable. We have known them to give good hatch after being below ninety degrees for some time. Such occurrences should be avoided. Remember, good hatches are the result of uniform temperature. Guard against high temperature as the weather grows warmer.

Finishing the Hatch

There is a lot of satisfaction in bringing off a good hatch. Good eggs, good machine and good care mean a satisfactory hatch. Do not experiment unless you are willing to accept the result of experimentation. Follow instructions as to ventilation and moisture. If eggs seem too dry dampen bottom of the incubator occasionally. When hatching begins, keep the machine closed until the hatch is over. When the chicks are all dry, begin to reduce the temperature to about one hundred degrees, and increase the ventilation to harden them for the brooder. This may be done by opening the door slightly. Keep them in darkness during the two days they remain in the incubator after hatching. This will tend to prevent infection from picking at droppings.

Have the brooder heated to about one hundred degrees and regulated. Remove the chicks to the brooder in a covered basket to prevent chilling. Give only water and grit or sand the first day. Do not feed for at least forty-eight to sixty hours after hatching. Feed lightly for the first few days. There are a great number of good methods of feeding, but it is generally agreed that rolled oats are a good feed for the first week. Then one can change gradually to commercial chick feeds or one of the standard home-mixture methods. Sanitation and uniform temperature are vital. Reduce the temperature to about ninety degrees within a few days, making the change gradual. Be diligent for a fortnight and the greatest dangers are past.

Prune Cherry Trees?

By Al. T. Brown

CAN a sour cherry orchard be successfully trimmed and pruned without injury?

The above question came out of the Question Box at the annual meeting of the New York State Horticultural Society, held at Rochester, N. Y., last January.

"I say yes! Increasing the vigor of the trees and increasing the profits! My experiments were made on Montmorency cherries. Early Richmonds and English Morellos being younger, were not trimmed.

The advice of all professional horticulturists and orchardists has been to let the sour cherries alone and trim out only cross branches and broken limbs.

This Is Why and How I Did It

Four years ago I purchased a fruit farm in Monroe County, New York, and among the orchards was a 15-year-old Montmorency cherry orchard that had never seen a saw or cutter. The trees were so thick with growth that one had to cut his way in and out. The two previous crops were abundant, but so small in size that they were rejected by the canning company after being picked and delivered to the cannery.

That didn't sound good to me. And I went to it.

The first year I cut out all crowding limbs and branches and thinned out a lot of the small growth to let in the light and air. There was some brush pile under each tree, I'll say. My two helpers, both first-class orchardists, protested and said that I was ruining the orchard and going contrary to all precedents and practices. The trees certainly were no good as they stood, and the orchard was "thoroughly" trimmed.

How Did They Turn Out?

The trees made a fine and healthy growth, were snow white at blossoming time, and I picked the finest crop of big, dark red cherries that were ever delivered to the canning company here. They volunteered this information and reserved each day's picking for a special pack. They specialize in quality.

And, better still, they paid me one cent more per pound than other growers received.

Successive crops have been just as fine, with the exception of 1921, when they were caught in the big freeze at blossoming time.

The second year after this severe trimming I went through the whole orchard and topped most of the trees, cutting back to a good, strong branch. This caused some sucker growth, which I will remove this winter.

Since trimming this orchard the leaves have been absolutely free from leaf spot, and have sprayed them only once each season, using a dormant lime-sulphur, 1-8 solution. But I soak 'em. Whether the absence of leaf spot was due to the abundant and rich foliage growth, I am not prepared to state.

I shall give my cherry trees the once over yearly, as I do the balance of my orchards.

Never will I hesitate on pruning sour cherries. It has never sounded reasonable to me, any way.

My profits were increased, and the trees were made more healthy.

Red Cedars Must Go

MR. J. L. PELHAM of Loudon County, Virginia, writes us of the step taken by the Horticultural Society of that county to eradicate the red cedars, which are responsible for the disfiguring cedar rust of apples. This is a splendid measure toward insuring healthy trees and fruit free from blemish. There are now in this county over 1,600 acres of commercial apple orchards and 600 acres of peaches. A single grower handled about 80 cars of fine peaches from his orchard in 1920. Mr. Pelham says, "Keep your eye on Loudon County, Virginia."

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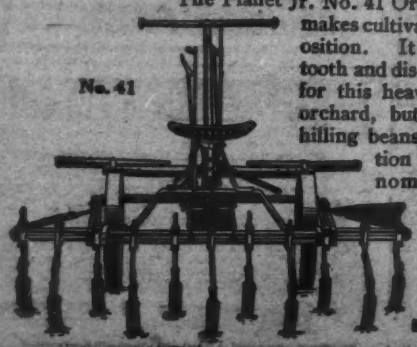

The Planet Jr. No. 41 Orchard and Universal Cultivator makes cultivating the orchard a paying proposition. It does the work of both spring tooth and disc harrows, yet is very light draft for this heavy work. Not only for the orchard, but for working fallow ground, hilling beans and potatoes, running irrigation ditches, it is a valuable, economical implement with a wide variety of uses.

Write for catalog showing complete line of famous Planet Jr. seeders, cultivators, wheel hoes, etc.

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Hark! the Radio

By Samuel Adams

EXCITEMENT over the discovery of the wireless telegraph, or radiograph, was dying out when BOOM! right in our own ears, down at neighbor Jackson's farm, we heard the big brass drum of the orchestra in New York, or Chicago, or Los Angeles. And not the big drum only, but the little one, the violins and flutes, the harp and the oboe, the whole assortment of instruments playing away like mad right there in the remote farm house. Then the voices of the singers soared over the accompaniment and, out of the apparently moveless air, surged such sweet sounds as country people rarely find opportunity to hear.

This must be magic. Had Jackson a little fairy in his home who was bewitching the company with supernatural art? Yes, a very modern fairy, a radiophone that reaches out with delicate fingers and gathers in the music from the air. You can have one too. They are invading the rural districts and transforming many a dull hour into delight never before dreamed of.

Music is not all that this modern marvel brings to us. Speeches by the greatest statesmen and the most eloquent orators can be listened to by family and friends as they sit at ease round the living room. There may be heard in your own home sermons delivered by a noted preacher, and, if you nod just a little, he will never catch you at it. All the funny quips and cranks and jokes of the vaudeville artists, come to you clear and crisp over the broad highway of the boundless air.

Profitable for Farmers

There's much more than mere entertainment to be had from the radiophone. Many states have arranged to send out market news by radio. Current events, banking news, business news, weather reports, crop reports, things of great value to farmers, are received at central stations and broadcasted to be picked up by all radio outfits attuned to the proper wave lengths.

Limit Far From Reached

It is an almost appalling thought that the ether flowing so freely around us, is pulsating with every sound made over the whole wide world. Even more marvelous to think that we can catch these sounds, and that some day, with instruments properly attuned, we, in an American home may hear the far sweet song of the Persian nightingale warbling in the Vale of Kashmir.

Some day, no doubt, the radiophone or a new form of it, will be so perfected that its use will be almost infinitely extended. Already it has reached the point where it brings to those who live in comparatively isolated places, a companionship, a cheer, an entertainment and fund of fresh information such as were formerly enjoyed only on the spot where the sounds were made.

No More Lonely Evenings

A city man returning from a visit to a fruit farmer's home said—"The only objection I ever had to country life was the fear that winter evenings might be long and lonesome. But they've changed all that. Two nights ago, at Rantoul's farm, I heard a concert that was taking place in Pittsburg, then a political speech in Washington and a scene from a vaudeville in Philadelphia. It was the most entertaining evening I have spent in a long time."

The rural districts have shown themselves eager to take advantage of the low-priced receiving radio outfits. If a sending apparatus is also wished, the cost goes up considerably. It is possible to spend lots of money on a powerful receiving and sending outfit. But what the fruit grower's family wants is to listen to the doings of the big world outside and not to talk back for its benefit. In private homes the small receiving outfits are by far the

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CROMPTON "All-Weather" CORDUROYS

The pants that resist water, wear, and weather.

You will know them by the label in the waistband.

You will like them because of the comfort and long wear in every pair.

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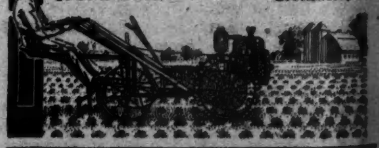

RADIO For Everybody

No matter what your interest may be in wireless—you can get everything at Radio Headquarters—courses of instruction (study at home or in Washington), wireless instruments, how to get and operate, books and magazines, free information, and advice on all wireless questions. What are you interested in—Write to

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Fresh Radio Wonders

A few of the wonderful things that have been done give us a glimpse of what may come to pass.

A Chicago radio station transmitted grand opera during the current season over an area of 750,000 square miles, so that thousands of persons throughout the central west enjoyed the opera. Operators in Texas, North Caroline, Vermont, Canada and Minnesota promptly reported that they were hearing the opera distinctly.

The Hamburger store in Los Angeles has a powerful station which will give news reports and concerts to 10,000 radio stations within a radius of 1,000 miles. Several ships at sea staged afternoon concerts and the passengers heard grand opera coming from the roof of the store. This station will give lessons to girls and boys interested in wireless operation.

Keeping Well to Wireless

The public health service of the United States started on Dec. 23rd, 1921, a semi-weekly "Wireless telephone health bulletin service," from their radio station at Anacostia, Va. Every Tuesday and Friday a message of advice as to how the average man and woman may preserve good health, is to be broadcasted from this station.

Kansas State Agricultural college will establish early this year a powerful wireless telephone plant. This will supplement the deficiency of the service of the United States Department of Agriculture caused by the scarcity of trained telegraph operators. The office of every county agent in Kansas will have a receiving apparatus and daily market reports will be broadcasted all over the state.

A Bright Outlook

Those who have not heretofore turned their attention to the extraordinary progress being made in the science of wireless, may think these statements almost beyond belief. They have only to recall the incredulous amazement with which the first rumors of the wireless telegraph were received.

Fifteen or 20 years ago that seemed even more miraculous than does the radiophone today. But soon wonder gave way to the tendency of the human mind to accept as a matter of course every evidence of human skill—such as flying for instance, or the passing strange leaps and bounds of Doug. Fairbanks on the movie screen, of the supernatural dexterity of the cook who bakes hot cakes, stacks of "wheats" and "bucks," in the window ovens of the cheaper restaurants. We look forward without any amazement to the time when we shall be talking by radiophone to our readers all over the country.

The AMERICAN FRUIT GROWER MAGAZINE has employed an expert who is familiar with all forms of radiophones and wireless equipment. We shall be glad to answer all inquiries our subscribers may be interested to ask. Address—Radio Editor, American Fruit Grower Magazine, State-Lake Bldg., Chicago.

Maryland Expert Dies

THE horticultural interests of Maryland have received a heavy blow in the death on Jan. 26, 1922, of Mr. W. C. Travers, who was associated with the State Horticultural Department for over twenty years.

His advice was highly prized by the orchardists of his state, and his spraying demonstrations were of immense money value to them. His claim to fame rests more particularly upon the splendid results he obtained in the con-

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Destroy fungi and worms; insure larger yields of perfect fruit. 35th successful year.
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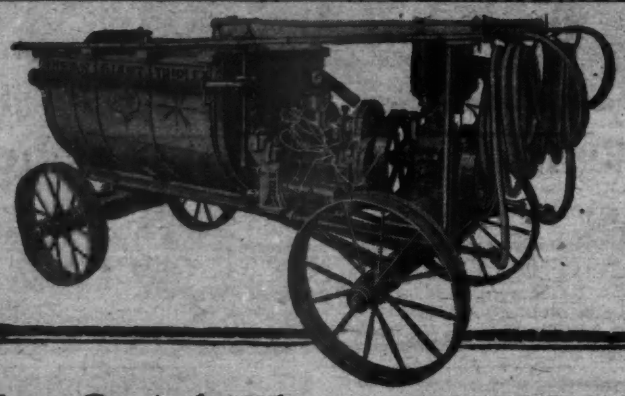

For Quick Thorough Work in Medium-size Orchards

Here is one of the most popular power sprayers in the fruit-growing world—an outfit designed especially to meet the demands of the grower with limited acreage, who wants thoroughness combined with speed and economy. The

"BEAN" Outfit 627

has a capacity of 9½ gallons a minute at 300 lbs. pressure. Equipped with 4 h.p. Novo engine and Bean Pump with porcelain-lined cylinders. Has Bean Pressure Regulator which keeps pressure uniformly at the desired point; is absolutely safe and dependable; saves fuel; and reduces wear and tear on engine and pump to the minimum. Bean Threadless Ball Valves can be opened up entirely in less than 2 minutes *without stopping the engine or lowering the pressure.* A big saving of time and trouble. Many other exclusive advantages. Send coupon for new Bean catalog describing full line of Hand and Power Sprayers.

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Originators of the first high pressure sprayer

104 W. Julian St.
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Bean Simplicity, Outfit 605. A handy, compact power rig for the small grower. Capacity 4½ gallons a minute at high pressure. Can also be had without truck.

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Please send me your New Sprayer Catalog

Name_____

Street_____

Town_____ State_____

Kind of fruit grown_____

No. of acres_____

Garden Calendar

January

January is the planting month. It is the month in which to arrange the borders, the beds, and the vegetable garden—on paper. No garden is properly made unless it is planned in advance, and the coming of the catalogues will supply inspiration.

It is wise to order seeds, shrubs and plants now, as orders are filled in rotation. Early orders are likely to receive more careful attention than those which come in late.

Seeds of vinca rosea for spring bedding should be started in the house.

February

If you want early rhubarb, place headless barrels over a few plants and heap fresh manure about them. The top of the barrel may be partly covered.

Material for a hot bed should be got ready this month, if one is to be started early in March.

This is a good time to repair the tools. If they are rusty, scrub with benzine and paint with white lead.

It is a good plan to spread old manure over the perennial beds and borders as soon as the snow is off the ground.

March

Early in March is the time to make hot beds and cold frames.

Tomato, cabbage, cauliflower and egg plant seed should be sown early in the month indoors or in hot beds, in order to have early crops.

Radishes and lettuce may be started in a hot bed and allowed to mature there.

Spinach and early peas may be planted as soon as the ground can be worked. Plowing or spading should never be attempted until the soil is dry enough to crumble in the hand. This may not be until April.

A top dressing of any good commercial fertilizer will help the asparagus bed.

Plant sweet peas as soon as the ground is ready. Also poppy seed.

Remove the litter from the perennials and the strawberry beds gradually.

Late in the month start tuberous rooted begonias in pots indoors.

Graft cherries and plums early in the month; other fruit trees later.

April

Make sowing of peas and spinach early. Then every two weeks.

Plant beets, cabbages, carrots, lettuce, leeks, parsnips, parsley, potatoes, radishes, salsify, cauliflower, celery, Swiss chard.

Lima beans, cucumbers, muskmelons, peppers and squashes may be started in cold frames for early crops. It is best to use paper pots.

Begin planting gladioli late in the month.

May

Cultivate all crops as soon as up, to keep weeds from starting.

Have your spray ready for the flea beetles. Wooden or paper frames covered with mosquito netting may be placed over the cucumber, melon and squash plants.

Transplant celery at least once to keep the tap roots short.

All the tender vegetables like cucumbers, melons and squashes may be planted after danger of frost has passed.

Lima beans may be planted in soil made especially rich.

Sow peas, beans, beets and carrots for a succession.

Start planting corn and continue every ten days.

Set out tomato plants by the middle of the month or soon after. Cover with light, cloth-covered frames or papers if frost threatens.

Prune shrubs after they bloom. The main thing is to get rid of dead and weak wood. Cut at the bottom. Nothing is accomplished by snipping off the ends.

Practically all the annuals may be sown in this month.

All perennial plants can be set out early in the month.

Plant dahlias and cannas late in the

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month after dividing the clumps. Continue to plant gladiolus bulbs.

Spray for currant worms on currants and gooseberries.

June

Plant sweet corn and bush beans twice this month.

If pop corn is wanted, plant it now.

Plant beets for winter.

Winter squashes and pumpkins may be started this month.

Grow a few rows of Dwarf Essex rape for the poultry.

Set late celery plants, first thoroughly soaking the ground. Cut back the roots one-third.

Tomato plants may still be set out. If the plants are spindling, make a little trench and bury a part of the stalk with the roots. New rootlets will be sent out, and stronger plants will result. Spray with bordeaux to prevent tomato rot.

Watch for cut worms in both the vegetable and flower garden. Poisoned bait will kill them.

Plow up the old strawberry bed and plant to late cabbages.

Portulaca and other rapid growing annuals may be sown.

It is still early enough to plant dahlias. Be sure the tubers are placed on their sides, with the eye up.

When setting out aster plants make liberal use of nicotine for the root aphids.

July

Make a last planting of sweet corn the first of the month.

Set late cabbage plants.

Cover the currant bushes with mosquito netting to protect them from the birds. The currants will hang on until August.

Sow lettuce in cold frames.

Sow early radishes for succession.

Keep the melons and squashes well covered with arsenate of lead and tobacco dust. At any indication of mildew use dusting sulphur.

Bury the points of squash vines at intervals to give protection from the borers. New roots will form where the joints are covered with earth.

Dust the potatoes with arsenate of lead for potato bugs, and with bordeaux for blight.

Plant turnips, beets and bush beans to follow earlier crops. But alternate crops when possible.

August

Seed may be sown the first of August for a late crop of peas.

Spray squashes, melons and cucumbers at least twice with bordeaux.

Cultivate often, especially as soon as the ground is dry enough after a rain.

Pansy seed may be sown very early this month.

The ripening of tomatoes may be hastened by placing them on straw in a cold frame with the sash in place.

This is the one safe month for planting the Madonna lily (Lilium Candidum).

Keep rhododendrons, azaleas and peonies well watered.

Spring flowering and winter bulbs should be ordered now, and freesias for early flowering indoors potted up at once.

This is a good month for dividing the peonies.

September

Celery should be banked for blanching, but care must be taken not to get earth into the heart of the plants.

Lettuce sown in cold frames will give a late fall crop.

Potatoes should be dug as soon as the tops have died.

If cabbage heads begin to crack, bend them so as to break the roots on one side.

A top dressing of old manure will help the asparagus. A new bed may be set now.

Harvest the onions when the tops die. Leave in the sun a few days before storing. They are best wintered in a cool, airy place in shallow crates with slatted sides.

Evergreens may be transplanted safely in September.

Peonies and iris may be set out up to the end of the month.

This is a good month for setting out

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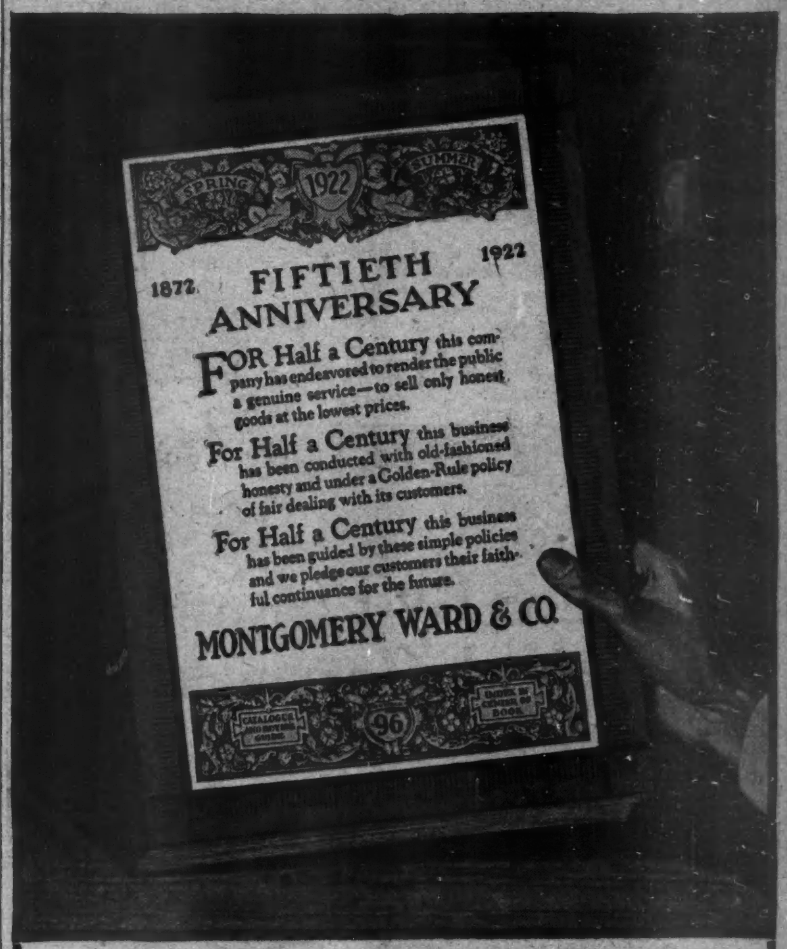

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perennial plants of all good varieties.

There is no better month for making a lawn.

October

Asparagus and rhubarb plants may still be set.

Parsley plants may be lifted and set in a cold frame.

When storing the potatoes sprinkle a little dusting sulphur over them to keep them from rotting.

Spinach and corn salad can be used until Christmas if covered lightly with straw.

This is the important month for planting tulips and other spring bulbs.

November

When the ground has frozen hard cover the strawberries lightly with hay or straw.

Mulch the rhubarb with manure.

Dig a few asparagus and rhubarb roots to force in boxes of earth in a warm cellar. Asparagus can be started at once. The rhubarb roots should be piled and allowed to freeze. They force best after January 1st.

Witloof chicory (French endive) is easily forced in the cellar and will provide salad all winter.

Celery can be set in cold frames, in pits in the garden, or on the cellar bottom. Set the plants close together and water the roots.

Brussels sprouts can be brought into the cellar, where they will mature.

Beets and carrots keep well stored in boxes of sand. Cabbages are best set head down in trenches, then covered with earth and litter.

Heap earth and then manure around the rose bushes to a height of a foot.

Mulch the bulb beds and the perennials when the ground has frozen.

Heap leaves around the rhododendrons and set small evergreens among the branches. It is well to thoroughly soak the ground just before it freezes.

Many of the lilies reach this country this month and should be planted immediately.

December

Sometimes the lily bulbs do not arrive until December. They can be planted now if the ground where they are to go has been kept from freezing by a covering of manure. It is best to get them into the ground as soon as possible, for they deteriorate rapidly when exposed to the air.

Dr. John P. Stewart

MANY of our readers will learn with regret of the death in January of Dr. John Pogue Stewart. At the time of his sudden death he was connected in an editorial capacity with the Pennsylvania Farmer. A native of Illinois, John Stewart graduated at the University of Illinois and later entered Cornell University, there securing his master and doctor degrees. For 12 years he was the head of the Department of Pomology of Pennsylvania State College. Following this he engaged largely in experimental work in farm fertilization. He was widely respected as an authority in this field, and his bulletins on spraying and fertilization of orchards were used by the Japanese government. There were long years of usefulness ahead of Dr. Stewart, he being but 45 at the time of his death.

G. Harold Powell Dead

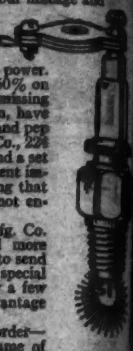
THE sudden death of G. Harold Powell, general manager of the California Fruit Growers' Exchange, at Pasadena, Calif., on Feb. 18, brings a heavy loss to the entire fruit industry of the United States. His life was one large accomplishment in the fruit field. To him, more than to any other one person, we are indebted for the organization of co-operative marketing of fruit. His activity was untiring and his vision broad. Had he lived he would have become a prominent figure in government circles. A feature article on Mr. Powell and his work, written by one of his co-workers in California, will appear in the April issue of the AMERICAN FRUIT GROWER MAGAZINE.

Motor Troubles Ended

New Invention Creates Wonderful Spark—Double Power, Make Winter Starting Easy, Stops Oil Pumping, Eliminates Carbon, Saves Gas—Free Trial Offer.

Any car owner who is bothered with a motor that pumps oil, foul spark plugs, wastes gas or carbonizes badly, can stop these troubles by using a remarkable device called Warren Transformers, perfected by W. F. Warren, a Kansas City motor expert.

In two minutes a boy can attach Warren Transformers. Then you will be amazed to see your car go whizzing up hills on high where you formerly had to shift gears. You will also notice a big increase in your mileage and instant starting in coldest weather. Spark plugs that formerly fouled and cylinders that pumped oil will be clean and dry and fire with full power.



If you want to save 25% to 50% on fuel and repair bills, be rid of missing cylinders, dirty plugs and carbon, have a quick start in coldest weather and pep on hills, write the Warren Mfg. Co., 224 Gray Bldg., Kansas City, Mo., and a set of Warren Transformers will be sent immediately, with the understanding that they do not cost you a cent if not entirely satisfactory.

So confident is the Warren Mfg. Co. that Warren Transformers will more than delight you that they offer to send a $4 set for only $2. This is a special introductory offer, good for only a few days, and readers should take advantage of it immediately.

Send No Money with your order—just your name and address, name of car and number of cylinders. Warren Transformers will be sent immediately. When they arrive merely pay the postman $2 and postage. Use them 10 days. If not satisfactory return and your money will be refunded. Write today. End your motor troubles. This offer fully guaranteed.

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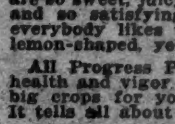

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Farm Women At Conference

By Mary Meek Atkeson

FOR the first time in history, perhaps, the real country women have helped to decide important questions for the nation in the recent Agricultural Conference at Washington. Twenty-four women were invited as regular delegates, and eighteen of them came. Many men delegates brought their wives along, and these visited the committees, took part in the discussions and were listened to with as much interest as if they had been regular delegates.

The women delegates were farm owners or farm managers, home economic workers, or represented the women's rural or partly-rural organizations. A few of them were given places on the general committees, but most of them worked on committee No. 11, dealing with farm population and the farm home.

Mr. Lowell, master of the National Grange, was chairman of this committee, but Mrs. Ketcham, of Michigan, was chairman of the section dealing with the farm home. The men admitted that on questions involving the country family or the country community the women were far the best spokesmen.

Importance of Farm Home

President Harding struck the keynote of their work in the conference when he spoke for "a new conception of the farmer's place in the national, social and economic scheme." That is a job at which men and women must work together, for the farmer's social standing, and much of his economic standing also, depends upon the character of the farm home and the farm community.

The farm home is still a place where labor is dignified and respected and recreation is carefree and happy. In the cities, homes are going out of fashion. The factory, the shop and the office are the work centers—the movie halls, the dance halls and the theaters are the recreation centers—so the only function of the home is to provide a place to eat and sleep and change one's clothes.

Even the country homes are feeling the influence of these disintegrating forces, and the women thought that everything possible should be done to keep the home the real center of their children's lives, with the community as a larger home of their more extended activities.

Two Dangers to the Home

Although many dangers to the home were mentioned in the discussions, only two were finally named in the report of the committee as being of great importance. One is the present policy of the press to pity the "poor farm women" and to play up unusual cases of drudgery in country homes as though they represented the common standard.

Country women do work, they say, and are not ashamed of it. Any labor done for love is dignified and respectable. But they do not like to be pictured as stupid and work-sodden, with no time for reading or recreation.

Chairman Lowell said that in all his acquaintance with country women he had never met one who was lacking in courage and interest in her work, though he had met many city women who complained bitterly of their hard lot. Any propaganda which tends to lessen the dignity and self respect of country people is a serious menace to the country home and the country community.

Another menace is farm tenancy, which in many parts of the country seriously endangers the stability of the farm home and of the country community. Tenants may be just as good people as farm owners, but they are much more apt to move about from place to place. These frequent changes break up the solidarity of the country community and lessen the in-

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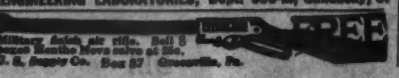

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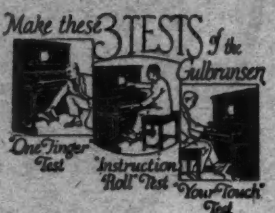

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"Jim always asks: 'Who plays so well at your house?' He won't believe it's I. He knows I never took a lesson in my life. I'll have 'em both over some night and open their eyes.

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JIM BROWN, President
The BROWN FENCE & WIRE CO.
Dept. 293 Cleveland, Ohio

JIM BROWN'S CUT PRICE CATALOG

terest of the tenants in schools, churches and other community projects. For this reason home ownership was strongly advocated.

Since community effort is one of the most important factors in country life, the women advised further study of rural problems and of community organization forms. Many groups of country people do not go forward because they do not know in what direction or by what means it is best for them to go.

Published studies of other communities would give them suggestions which could be carried out under local conditions. A similar recommendation was for the compilation of census reports on farm population, like that already published for urban centers.

Education can help to solve the rural problem. Co-operation as practiced in rural life should be taught in the country schools, and home economics work is just as desirable for the country girl as for the city girl. Good high schools should be established in reach of country children. Otherwise they are compelled to go without high school education or the parents must leave the farm in order to educate them. Further extension service work in home problems by the state agricultural colleges and by the Department of Agriculture is also desirable.

Home Health and Books

Other forces might well be developed as a help to country life. The various rural organizations should develop the work of their home committees into a more thorough study of food, clothing, housing, child care and the higher life. Boys' and girls' clubs should be established and encouraged, because they increase the young folks' interest in country life, their knowledge and their ability to co-operate with others in a good cause.

General health agencies should give as much attention to the country as to the city in the establishment of hospitals, dispensaries, etc. Far too little attention has been given to rural health problems and to free medication for those who are not able to pay. The maternity act recently passed by Congress was commended as of service to country women.

Free circulating libraries should be made available to every country community. Many states now furnish free libraries, but these should be extended, new routes established and everything possible done to call the attention of the people to their opportunities.

Draw City and Farm Closer

Not the least important of present conditions is the general lack of understanding between city and country, largely because of the lack of personal touch between them. City women have usually a larger experience in organization work, but country women have much to give to any national organization. They know country conditions and country people at first hand.

For this reason the women urged that farm women always be recognized upon the governing boards of all women's general organizations, and that farm women as well as city women be considered in appointments to national and state political positions. Equal representation of country and city homes will add to the dignity of country life and bring about a better understanding between country and city.

But the home is the paramount issue. Men and women of the committee agreed that the conclusion should speak again of the farm family. "We strongly recommend the conservation of the American farm home. It offers the best opportunity for the development of the ideal family life in which the farmer and his wife are equal partners in work, social life and business, and in which the children have an opportunity to become junior partners in the management of the farm and home."

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The Orchard Home

A Section for All Members of the Family

Edited By MARY LEE ADAMS

Colds and Common Sense

WHAT are you doing for that March cold? Sometimes a spring cold is hard to break. It lingers into summer and, being tired already from the cold, the heat tires you more. You get run down and discouraged and all work seems harder.

The New York State College of Agriculture at Cornell University, makes a suggestion for the treatment of such a cold, and if you'd like to try it, here it is. No medicines, just a common sense diet for breaking up the cold first and for building up the system afterwards.

You must remember that one is more likely to take cold when tired or run down and so, as prevention is better than cure, you must try to keep in good trim and fairly well rested in order that the cold germs may not take hold on you. But if it is already too late, try this diet until the cold is broken.

Broths and gruels, hot lemonade, orangeade, stewed fruits and vegetables and baked potatoes. These are all desirable for use in the first stages. Note the important place that fruit and fruit juices hold on this list.

After the cold is broken, attention should be turned to building up the system. Go from the light diet to your normal food and by degrees make use of even more nourishing fare than usual. More milk and eggs, more butter, fat, cream and bacon and MORE FRUIT. This will aid the body to repair the damages caused by the cold.

What Women Want

A LARGE class at a co-educational college, recently answered the question "What are the qualities you desire most in a husband or wife?" You're going to be surprised by the nature of the response, and interested in the variation of ideals as shown between men and women.

First, in both cases, good health was desired in the object of their choice. Probably the fact that this particular class was one in eugenics, accounts for the stress laid on health. Let us rule this out and start with the next requirement, and we shall get an unbiassed understanding of what our young people think they want in a life companion.

1st—Men demand a good disposition: women demand good character.

2nd—Men seek beauty; women want a good disposition.

3rd—Men ask for education; women for financial standing.

4th—Men wish for maternity; women for education.

5th—Men want good housekeepers; women want paternity.

6th—Men desire character; women wish for appearance.

7th—Men like their wives to dress well; women require the same.

8th—Men prefer good ancestry; so do women.

Here we have several things contrary to prevailing ideas. Men value a good disposition beyond beauty. They place character more than half way down in the list of desirables,—they think more of good housekeeping. They have no intention of living off of their wives.

Women want character in their men even before a good disposition, and rank both higher than money. Men and women prize education ahead of children. Women care less for good looks in their mates, but both value dress equally and neither values it very highly. Neither gives a hang, really, for ancestry. It is lugged in after they have run out of other things to think of. Charm does not enter into the calculation. Manners are not considered at all. Gentleness and meekness—those old time graces of the ideal woman—have disappeared even from the mind of the male.

We Live Too Fast

NOW and then Americans pause long enough to ask themselves what's the use of traveling at such a high rate of speed along the road of life when the same thing awaits us at the end whether we have raced or lingered. Why not enjoy the scenery as we go along? Why not pause for more pleasant intercourse with our fellow travelers?

As a nation we are constantly at high-tension, trying to "get there" wherever that may be. Our lack of tranquility is shattering our nerves and shocking to calmer onlookers. From age-old China comes a criticism which we might do well to heed. Admiral Tsai Ting-Kan who visited the States recently, esteems that as a nation we are not happy. And why? Because we are too busy.

"What is happiness?" asks this sage. "If you press me to the point, I must say that you do not seem to understand the real meaning of the word in the United States. Joy, exhilaration, pleasure, physical comfort, you have them all and to spare, but quiet, measured contentment or happiness, no! To my mind happiness implies tranquillity. Confess, that state of mind does not exist in the United States. You are always in a rush, and continually strive to acquire something more. In the end you approach the point of satiety. We, in China, scarcely know the feeling of that sensation."

Who'll Buy? Who'll Buy?

CLEVER women, seeking a profitable outlet for their talents of cookery, may be interested to hear of a display noted last week in the most beautiful department store in the world. In a sort of glorified food department, (not groceries, nothing so ordinary as that) the eye was attracted by a perfectly luscious-looking display of jams and jellies.

The glass containers were of such quaint and unusual shapes as to command attention. Fat and round; wedge-shaped; tall, slim and elegant; plump and cosy; pretty enough to serve for a wedding gift they were. They made one realize at once that herewas something rare andsuper-excellent.

A pure white, heavy paper, made to size and sealed over the tops of these artistically attractive glasses, bears in print the name of the product and the name and address of the maker. Here then, is one woman who has found a most select and probably most profitable market for her dainty output of fruit. This may serve as a hint to others equally capable.

Musings of Molly

IS THERE always a black spot in your sunshine? It's your own shadow.

General adoption of power washing machines would go far toward banishing chronic fatigue and releasing a flood of feminine energy and enthusiasm which would be a big asset to any community.

Not a little domestic unhappiness has resulted from the downward adjustment of earnings. Families cultivated and enjoyed expensive tastes during the period of inflation and are not now equal to bearing cheerfully the strain of self-denial.

Many a marriage would be happier were the husband and wife real partners. The man who treats his wife first as his sweetheart and then as his comrade in business as well as pleasure, seldom finds her dissatisfied.

Fatigue is a poison. If the house mother will invariably stop and rest for a few minutes before she nears exhaustion, it will do more than any tonic or medicine to keep her healthy, happy, young and ready to be good company for husband, children and friends.

Maude Adams, celebrated and delightful actress, has not appeared on the stage for some time. She is busy in the General Electric company in Schenectady, N. Y., perfecting a motion picture color process which she is said to have invented.

Seven miles an hour sounds pretty slow, but the engine that will maintain this driving force week in and week out, day and night, throbbing every second for 40, 50 or even 90 years, is worthy of respect. Such an engine is the human heart which keeps the blood stream sweeping round and round in the body at the rate of seven miles per hour.

Flowers have high therapeutic value according to many physicians. At one famous sanitarium, each woman patient is presented on her arrival with a bouquet of cut flowers. Orders are frequently given to place flowers in the room of those patients who are suffering from depression. What works for cheer in the hospital, will bring gladness to the home. No living room is thoroughly liveable without some plant, fern or flower.

NEW SERIES

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"The Most Economical Car I Have Ever Driven"

Thousands of farmers who drive Overlands could say just as much as this farmer-owner writing from Oregon.

Twenty-five miles and upwards to the gallon of gas is very common—with high mileage for oil and tires.

Low first cost plus low operation and upkeep expense make the New Series Overland today's outstanding automobile value.

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Roadster $595 Coupe $850 Sedan $895

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The Vertically Adjustable Bull Wheels Keep DO-IT-ALL Level

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The Baby Do-It-All Tractor is a small tractor for gardens and very small farms. It costs only $225. It is an immense labor saver. Printed matter on both tractors, if you ask for catalog 52.

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This is what C. H. Fuller, 30 Loomis St., Montpelier, Vt., grew from 1 of my 1200 to 1 Beans. One plant produced 354 pods. See his report in my Seed Book. It is a great Bean.

My Improved Stock is better than ever—grows strong and erect, branching freely, producing handsome well filled pods up from the ground, which literally load the plant. Beans being pure white of the finest quality.

Plant after danger of frost only one Bean in a hill and they will mature a crop in from 70 to 90 days. The yield will surprise you. Packet 60 Beans 10c, 3 pkts. 25c.

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27 Varieties Flower Seeds—Special Mixture for outdoor culture prepared specially for a gorgeous Flower Bed of 20 square feet, wonderful colors. Packet contains the 27 kinds (over 3,000 seeds) Eight Cents.

Special Offer—I will mail one packet each, 1200 to 1 Bean, Giant Tomato, Fancy Prolific Pickles, 27 Varieties Flower Seeds, all 4 packets for 10c, or 3 packets of each for 25c.

1923 Seed Book Free, 17 Novelties in colors, hundreds Best Vegetables and Flowers. Lowest Prices. Write today.

Giant Tomato

—One of largest grown, vines very strong, will carry enormous weight offruit, specimens often weighing 2 and 3 lbs. each, very solid, few seeds, crimson color. Pkt. (100 seeds) 5 cents.

F. B. Mills, Seed Grower, Box 30, Rose Hill, N.Y.

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Raspberry, Blackberry, Currant, Grape, etc. A complete line for home garden or for the commercial grower. Our plants are first-class and our prices reasonable. Send for free catalog.

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U.S. RECORD 1 ACRE SET SAME YEAR $2,059.20 CHAMPION EVERBEARING STRAWBERRIES

Will bear 5 mo. first year set. Last chance for plants $2.50 per 100 P. P. BOOKLET FREE.

EDW. L. LUBKE, New Buffalo, Mich.

The Winners in Letter Contest

By Mary Lee Adams

WE TAKE much pleasure in announcing the winners in the contest, "Five Best Things," and in reproducing below, for the benefit of our readers, the three letters which have been judged most worthy of the $5.00 prizes.

The Prize Winners

ETHEL YOUNG
525 11th St. Bowling Green, Ky.

A. W. SYKES
R. F. D. 1 Cape May, N. J.

MRS. R. J. GAIGE
1017 College Ave. Elmira, N. Y.

So many excellent letters were received, that the judges found themselves in perplexity. Some first-rate letters were too long to be considered, for the 400-word limit had to be strictly observed. For one reason or another, after carefully weighing the merits of each, the fortunate ones were selected.

High Standards Prevail

While the volume of response to the question, "What Are the Five Essentials of a Well-Rounded Character?" has been very gratifying, the quality of it has been such as to give the keenest pleasure. If our readers could see all of these letters, they would be at once struck by the high standards which prevail.

Truth and honesty are in the lead. Evidently it is inconceivable that anyone could win esteem without these qualities. Love and kindliness, industry, ambition, helpfulness and good citizenship are held to be implicit in a well-rounded character.

No one, after reading these letters, has any excuse for feeling pessimistic over the future of the country. The land that produces people who hold the ideals expressed in these letters furnishes no excuse to those who continually lament our loss of moral fibre and believe that, in consequence, "we are going to the bow-wows."

The Next Contest

Just here it may be well to remind you that the contest announced in our February issue, "Is Marriage a Failure?" will close on March 10. Because you did not win a prize when you first tried is no reason why you should not be more fortunate next time.

Why not write us your views on marriage? Many are doing so, and some of the letters are thrilling. The contest editor feels that before March 10 she will know more about marriage than any individual on earth, or under the earth, for that matter—not excepting Blue Beard and Solomon.

Letter by Ethel Young

The first essential important to the perfecting of a well-rounded character is, Christianity. I do not mean the word in a narrow, bigoted sense, but the kind of Christianity that loves and begets love, that bears and forbears.

With the love of God in our hearts we can see good in the world and help others to see it. This kind of Christianity will cause us to help our fellow men to live cleaner, better lives spiritually, morally and physically.

The second essential is Love and loyalty to one's family and home. To those who learn early in life to obey home rules, rules at school and later laws of town or county, state and nation are easily obeyed. So often we find criminals to be men and women who have not known the love of home and family or have been unloved and disobedient in childhood.

The third essential is Education, not only that which is acquired from the study of books, but that which one gains through observation from childhood through life. One can never move outside one's home or go to a church, lecture hall, or place of amusement, without seeing and hearing new things that should make one broader and a better citizen in every way. The education of a well-rounded character is never complete.

The fourth essential is to have a Purpose in Life and to toil on in spite of discouragements. If it is impossible to do the thing one has planned to do, then, do the thing that is best, but with always the determination to accomplish something definite in the end.

The fifth essential is to find early in life what one's real talents are and develop them, instead of trying to do things for which one has no natural ability.

A well-rounded character is never a square peg in a round hole.

Letter by A. W. Sykes

In requesting five essentials, I am afraid you have set us a difficult problem. Had you requested the one essential, I should have at once stated, "The Golden Rule," which I regard as the ideal requirement for a happy, contented, prosperous community. It is all summed up in the one sentence, "Do unto others as you would they should do unto you."

However, as we have to select five requirements, I would put them about as follows: Truthfulness, Charity, Honesty, Ambition, Fearlessness.

Truth is the first essential, as any false statement is failing in our duty to our fellow man, and although in some cases it looks as though there were a premium on falsehood, yet "Truth is mighty and will prevail."

By Charity, I do not mean the mere giving of alms, but rather the heaven-born charity that is shown by man or woman who by uprightness and rectitude shows the world the beauty of living so that others are made happy and cheerful by their presence.

Honesty must be practiced if success is to continue. This is, I believe, coming to be more recognized by modern business men and women, as shown by the "Money Back Guarantee" in vogue at present, if goods are not up to expectation or as represented. This is in marked contrast to a number of cases known to the writer, in which the policy was to get the dollar, no matter how.

Ambition is essential to the success of any business, but should be so held in check that the business not only shows financial success, but that the rest of the world is the better for the business being developed.

Fearlessness is required in conducting a business in a progressive manner. Not merely in accordance with the laws of the country, but also with the laws of justice. It has been said that no act of statesmanship is strictly honorable, and some would apply this statement to business, but a man or woman who practices the above precepts should succeed and also benefit all with whom they come in contact.

Letter by Mrs. R. J. Gaige

I think it is a perfectly splendid idea to ask people to write these letters. It not only helps others but causes those who write to think of things worth while.

The five best things in life, I think, are:

First—To make our Creator first in everything.

Second—To make our home the happiest place on earth for our husbands and children.

Third—To keep smiling and always be ready to lend a helping hand to those who need it.

Fourth—To do what your conscience dictates as right and not be too ready to do what someone else says is right because it is easier.

Fifth—To live a clean, moral life.

Future Letter Contests

The response from our subscribers in these contests has been so pleasing that we wish to make them a regular feature of this department. Please write us your suggestions for an interesting topic.

An Old Maid's Garden

By Mary Lee Adams

WE MIGHT call this a spinster's garden. The word spinster suggests something "finicking" and my friend is frankly an old maid and by no means ashamed of it; a big-hearted woman with a passion for flowers, who looks back upon several discarded suitors and still finds them wanting in comparison with her beloved blossoms.

Limited means limited the area of the garden plot which is set rather quaintly to the south side of the dwelling and entered from a double glass door in the living room that opens directly onto a few yards of pergola, so short that perhaps it should rather be called an arbor of grapevines. The garden proper is laid off in a turfy square inclosed by a white paling fence hung with vines from the neighboring woods, and over which a few trees droop their branches and cast fleeting shadows that do not interfere with the growth of the plants inside.

The square is surrounded by shrubs which give place at the side opposite the entrance to an arch of climbing roses in which swings a little white gate. Two tiny paths intersect the square at right angles and come almost to the middle of the turf which has been left undisturbed in a small circle, in the center of which stands a sundial of good design—the only feature of the garden that really cost anything for the shrubs and flowers have been contributed and exchanged through the years with gardening neighbors. Had there been the possibility of a fresh, round pool of water in the center, this would have met her wishes more exactly, but as no water was to be had the sundial was chosen as a central point of interest.

How the Garden Is Planted

The surrounding shrubs are set with sufficient irregularity to form no hard and fast line as they infringe upon the grass and mass a little more densely in the corners. Beneath them, running out a short distance into the grass in front, bloom a succession of bulbs. The procession of these is led by crocus and hyacinth, next daffodils, a few tulips, narcissi, lilies of the valley, ending with the many hued iris.

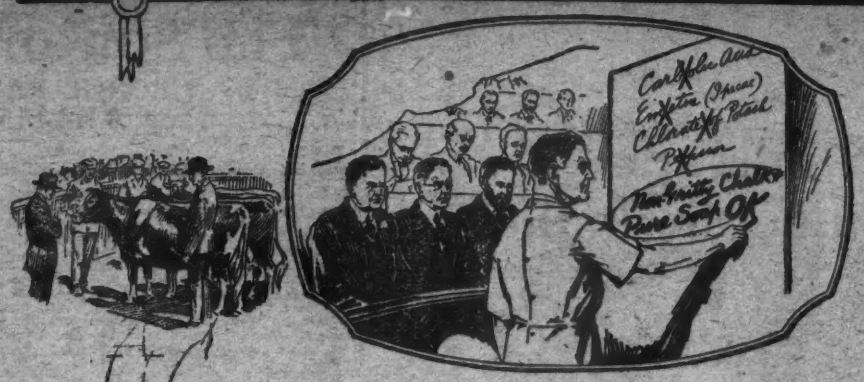
While they last they are accompanied by the forsythia, or golden bell, followed by lilacs white and purple, spirea, weigela, deutzia and hydrangea. For the latest blooms, budlea and althea are given space. Half a dozen big peonies mingle with the shrubs and their hardy foliage and magnificent flowers lend a most ornamental note. Close against the fence a clump of hollyhock rears its spikes above the lower shrubs and foxglove and delphinium poke up their heads.

Along the Tiny Paths

The borders on either side of the paths now claim our attention. Just a few roses were thought practicable and half a dozen good ones were placed, three on each side, at the end of the path by the little gate. Their bloom is passing when nasturtiums, which form the inner edge of the borders, come into flower and, as the paths are so short, it is not a hard task to keep them constantly picked to the great advantage of the vases, and to the length of their bloom.

Poppies then flaunt their brief day and phlox throws a wide ribbon of white and rosy bloom. As summer lingers, marigolds grow bright and zinnias offer a bewildering assortment of hues. Asters follow and hard upon them, then comes the scarlet sage. This holds the fort almost to the last gasp, but chrysanthemums are even hardier, and frost is needed to scare away these "Christmas roses."

Such a garden makes a minimum demand upon the purse and attention and gives an ample return. If you have one like it you have been taught the great lesson that it is not in the multiplication of splendors that happiness lies, but in the possession of a few things that bring us real joy.



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AT the Livestock Shows you like to watch how carefully the judges examine each entry. You note how each individual point is thoughtfully weighed before the awards are made.

Just so in the selection of a tooth paste, you, like dentists, can judge each point with utmost care. Common sense tells you that you want a safe DENTAL CREAM which washes and polishes the teeth thoroughly, that has *no* harsh grit to "scratch" or "scour" the precious, protective enamel. And you want one without strong drugs, one which does not harm the delicate tissues of your mouth.

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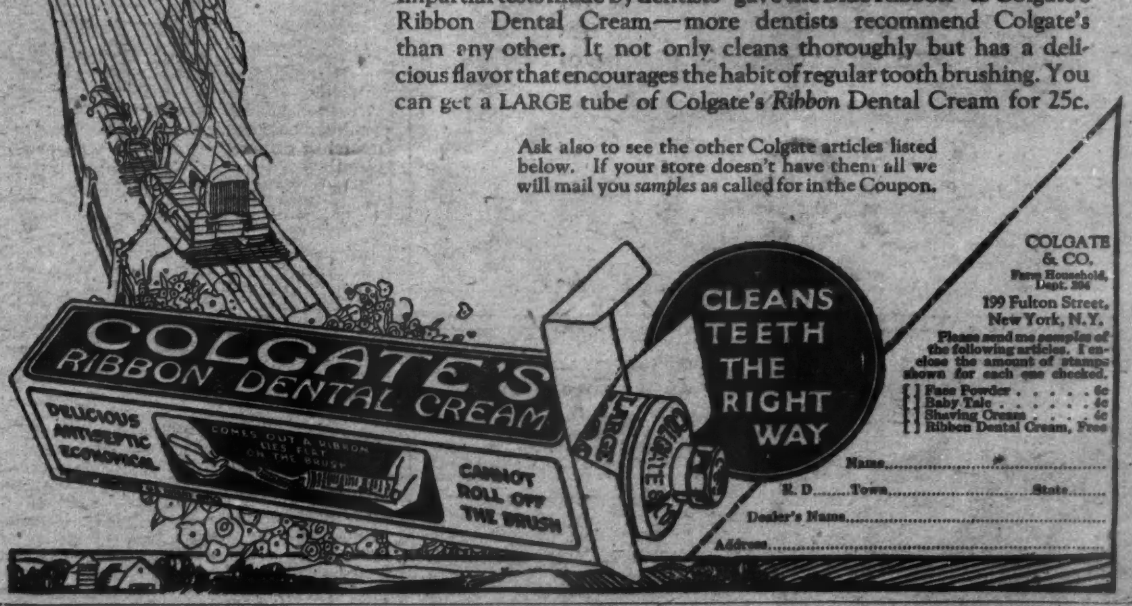

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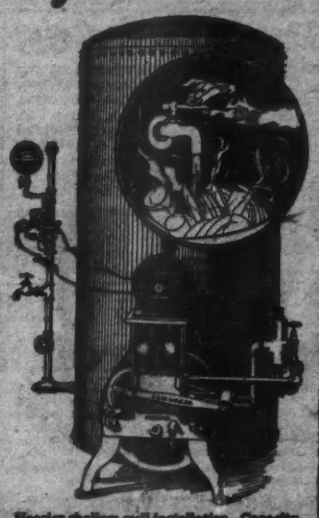

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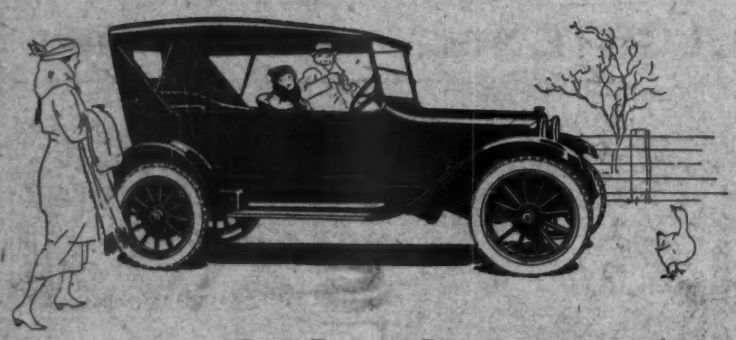

DODGE BROTHERS, DETROIT

The Son of Wallingford

By GEORGE RANDOLPH CHESTER
and LILLIAN E. CHESTER

Young Jimmy Wallingford with "Toad" Jessup narrowly escapes running over a flock of geese. Pretty Mary Curtis laughs at them, and from that moment Fawnlake City becomes to Jimmy the most desirable place in the world to locate. Dusk finds them still talking to Tal Curtis, Mary's hospitable father; but in leave-taking, as he is about to give his name, Jimmy poignantly recalls the scene in the Wallingford library that is the cause of his leaving home. J. Rufus had angrily exploded: "I am not satisfied with you, Jimmy!" When he leaves home, Jimmy drops all but the first syllable of the family name. He with Toad Jessup goes to Fawnlake City, to be near Mary Curtis. Toad finds oil bearing rock on the Curtis farm. They start drilling for oil. At a thousand feet they sell their racing car to get money to continue drilling. At Fawnlake City, Jimmy and Toad find J. Rufus Wallingford, Blackie Daw, enjoying a Persian Carnival. Mrs. Wallingford and Violet Bonnie Daw have come back with the boys. Blackie Daw discovers Jimmy and Toad are the "Wall" brothers, so Wallingford refuses to go on with his fake land scheme. Jimmy gets jealous when he sees a stranger talking intimately with his Mary. Jimmy recognizes the stranger as "Doc" Blinkers, a medical student.

Too late now for Jimmy to make a confession to Mary; "Blinkers," Henry Beegoode's son, told it all, his nose hooked down and an ugly snarl on his lips. And those who loved Jimmy had to stand by, helpless, and watch him take this bitter lashing with never a physical wince, though his face was set and his lips quivered in the deadly hurt of it, for he was unable to offer a word in his own defense—it was all true.

"Mary!" Toad confronted her as Tal patted her hand, and Toad's honest face was aglow with loyalty. "Jimmy was on his way to tell you all about it, to explain everything!"

Slowly Mary Curtis found herself amid the wreckage of her humiliated love, and it was a very straight-necked and a very stiff little Mary who looked coldly at Toad.

"With more lies? He came here under an assumed name, didn't he? Won my friendship under an assumed decent character, tricked my father out of his land! Explain? What could the son of Get-Rich-Quick Wallingford explain?"

Jimmy did not move, did not even flinch when Mary turned her cold glance on him, nor when the Curtis family, once his friends, ignored him as they started to go. Toad took a step forward, as if he would follow them to make one more appeal.

"It's no use, Toad," Jimmy said quietly, and he could have held himself in that dead poise, alone in a dreary universe which had no sun or sky, except that just then a soft hand was laid on his arm and Jimmy's mother stood beside him, the anguish of understanding in her eyes; and then the ice melted in Jimmy's heart, and tears came and he wasn't a man—he was just a boy!

MARY CURTIS did not know that the way was long nor the hill steep, as the silent family trudged up Main street amid the excited throng all agog with the sensation of Get-Rich-Quick Wallingford, the Wall brothers—and Mary! No pallor now on little Mary's face, no pallor on her lips, for the neighbors with their pity had awakened her to her shame; and it was that which made Mary's neck so straight and set her chin so high and so stiffened her anger as they neared the Curtis home.

There was the derrick, looming its ugly head above the trees in the hollow. How she hated the thing! It must come down! And here was the gate where she had stood when she had flirted with Jimmy, the son of Get-Rich-Quick Wallingford, "Snookums," the chorus girls' pet; and almost a shrill shriek escaped her as she came to this phase in her angry self-revilement. Up the hill yonder, and visible through the high-pillared perspective of the portico, was the big rock where she had kissed him, unasked! What must he think of her, this gay young roisterer of the city, who had spent his careless time with girls among whom kisses were cheap! How many of them had pressed their warm lips against his, how many of them had his arm encircled and drawn strongly closer? Suddenly this girl of wholesome ancestors and high ideals felt soiled, degraded, common, by having grouped herself with these others, and unconsciously she rubbed her lips with the back of her hand, rubbed them harshly, roughly, as if by that she could have taken off the contamination of the kiss which had lingered there, a sweetly quivering thing, these whole two weeks. In the nights she had felt the tingle of that kiss, and now she hated him for it! Snookums, the chorus girls' pet!

"Don't be foolish, Mary darling," conversed grandma when they had reached the portico and ma had stalked speechless into the house. "I've lived long enough to know that your heart will give you more peace than your pride. Why, I couldn't be mad at Jimmy even now; and if he came around with Sweet Patootie and asked me to take a ride, I declare I'd go."

Grandma's defense of Jimmy brought an explosive laugh from Mary. She laughed and she laughed, dropping her arms by her sides limply, and Tal Curtis beamed with delight at this change in his daughter, until by and by the laughter had a queer sound, and he hurried over to her, and she came into his arms and sobbed until she stopped from exhaustion, while he smoothed and smoothed at her pretty brown hair and called her his baby! Grandma, looking on in deep approval, for Tal had always been such a comfort to her, decided on just the delicate moment when Mary might be better off alone, and took her son into the house.

The wisdom of the aged comes only with age, and youth cannot absorb it. The things which had changed little Mary still existed. There was the ugly derrick, there was the trumpet-vined gateway, there—— Suddenly into her reverie there broke a babble of voices, feminine voices, and, turning swiftly toward the road, she beheld the Hotel Splendide bus filled with gay young women, and it was wheeling and stopping in front of the Waite place! And there was Sweet Patootie, filled with Wallingfords and Daws! Mrs. Waite and her spinster sisters-in-law, Patience and Prudence, afraid and yet thrilled over a splendid bargain they had made by phone with Mrs. Daw and Mrs. Wallingford, came hurrying out to greet them and the young ladies who were to be "rested"; then down tumbled the "Jazz" persons from the bus, helter-skelter into the house, with such a reckless display of lingerie and hosiery as made the Waites, particularly the Misses Waite, gasp so violently that never again would they have the normal control of their lungs.

Life, vigorous, bounding life, had come up on the hill, and the tang of it might have gripped any one who watched; but not little Mary Curtis, leaning against the big pillar on the side portico, concealed amd the honeysuckles. What did it mean? Something unpleasant and aimed at her, she was sure. How could the Wallingfords and the Daws be so brazen after their exposure? How could they carry themselves with such cheerful effrontery? How could they be so apparently happy in bringing those young women up here across from her home! Hadn't they done enough? Hadn't Jimmy—— She stopped herself abruptly. There were no tears in Mary now; but where she leaned against the big pillar the honeysuckles trembled.

THE party on the other side of the road ignored the Curtis place, except for Toad, who looked over constantly, rasping his stubborn hair. Jimmy came out of the house, where he had escorted his mother and Aunt Vi, and as he joined his father and Blackie and Toad in Sweet Patootie, out of the various windows there welled a chorus of affectionate good-byes to "Snookums," also "Spots" and "Pops" and "Legs," which last was the name most in favor for B. Daw. Then Sweet Patootie wound round the hill and up to the oil well, the Big Hope!

"The Big Hope!" chuckled J. Rufus and slapped Jimmy on the shoulder to ease the sting of that taunting reminder; nevertheless Jimmy's father sank into troubled thought. The boy's acumen in forming this company, with the railroad joker in it, was entirely too professional to put at ease one who knows that profession all too thoroughly!

The boys had finished packing their personal effects for removal to the Splendide, when the resident stockholders of the Big Hope Oil Company marched solemnly up the hill in the wake of their natural leader, Talbot Curtis, who began as follows:

"Gentlemen, I'm sorry to say that we are compelled to ask for a dissolution of the corporation heretofore composed of my family and young misters—misters—" He trailed off in confusion, while he debated whether to use the new names or the old ones of Jimmy and Toad. "Gentlemen, you didn't organize this company under your own names, which might be construed into prima facie evidence of intentional fraud. So, gentlemen, you face an injunction and a suit for dissolution."

"Aw, Tal, you don't mean it!" suddenly blurted Toad. "Aw, look here!

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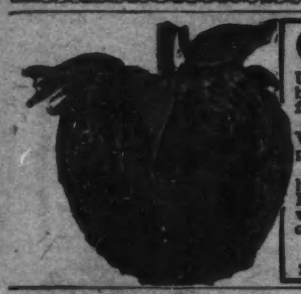

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KIGER'S NURSERY - - SAWYER, MICH

and he slammed down the hatchet with which he had been sullenly chopping at a block of knotty wood. "You people don't really feel that way about this—and us!" A quick glance toward Toad from those experienced handlers of delicate situations, Messrs. Wallingford and Daw, and the same quick glance of apprehension from the beginner in the art. "We've all been friendly, and it's rotten to have to break it up. I say we just get together——"

"If you please," broke in the clear, crisp voice of Ma Curtis, "this is a business matter, and a very vital business matter, since you own half our land, and, after all which has occurred, this is neither the time nor the place for sentiment, Talbot!"

"Of course, mother," returned Talbot hastily. "Gentlemen, there is one amicable alternative. As president of this corporation, I desire to resolve this informal meeting into a stockholders' executive session, for the purpose of annulling the company."

"Such a meeting can't be called without the due formalities, Mr. Curtis, except on concurrence of all the stockholders," responded Jimmy briskly. He was sure of his ground in this matter and had made up his mind about the balance. "I for one do not concur, nor will I consent to a dissolution of the company, nor will I allow injunction proceedings to stop us without a contest. I'm going through!"

In answer to that ring in his voice, Mary Curtis looked up, and squarely at him. It was the first time their eyes had met since they had been under the dome at the Hotel Splendide, and between them came that definite opposition of will which is a breathless affair between people who have cared.

EARLY next morning an important function occurred in the Hotel Splendide's third floor, parkfront suite, or more exactly, in the room with the Dolly Varden wall paper. Here J. Rufus Wallingford sat at his glass-topped mahogany desk, and motioned his oppressors into easy-chairs, and laid $10,000 cash in a neat pile in plain sight, and drew a pad of paper toward him, and produced a fountain pen. He looked at this a moment, then exchanged it suddenly for a gold-mounted pencil. "This is better," he explained to the other participants in the important function: Mr. Henry Beegoode, Dr. Bertram Beegoode, erstwhile "Blinkers," and Blackie Daw. "With a pencil I can make a carbon of it, and the two copies will be identical." He took from a drawer a carbon sheet, interposed the carbon between the first and the second sheets of his big writing pad, rapidly wrote the bill of sale and offered it for signature.

The pencil was a hard pencil, and Henry Beegoode had to press firmly to make a mark. Young Dr. Beegoode, very austere this morning, for today he was a regular doctor and dressed gloomily for the part, then appended his signature as a witness, as did Mr. Horace G. Daw, twirling his sharply pointed mustaches so that they drooped straight down and were forlornly ragged. Then Mr. Wallingford handed over the money, and while the sideburned Henry Beegoode greedily counted it under the equally greedy surveillance of Dr. Bertram Beegoode, both hook-nosed and crow-footed, Mr. Wallingford folded, right on the pad, the two copies of the bill of sale, legal fashion, and folded with them the next blank sheet, which was number three from the top of the pad!

"Here's your copy," gruffly proffered J. Rufus. Then slipping from the inside of the packet the two copies together, both the original and the carbon of the bill of sale, he handed them, as if they were one paper, to Henry Beegoode, and at the same time he placed sheet number three, the blank page folded like the others, in his breast pocket.

"Well, Mr. Wallingford," virtuously observed Henry, "leaving ten thousand dollars in a town in place of taking money out ought to be a lesson to you—he, he, he!"

"He, he, he!" echoed young Dr. Beegoode. "And I suppose you and your family will be going elsewhere as rapidly as possible."

"Well, no," returned Mr. Wallingford with such a sudden dropping of his nervous funk, and such a sudden resumption of his twinkling eyed suavity, that Henry Beegoode, also Doc, stared at him, perplexed. "I'm not going to leave town. I intend to remain here, with my family." Henry and Doc cast glances at each other, slow, lingering glances. Their victim's broad shoulders now heaved. "I'm going to stay here for the same reason that yesterday I refused to sell any share of that New Bagdad site, which, as you may soon have occasion to remember, was at that time part yours; he, he, he!" And allowing his chuckle to come forth, jovially and genially and freely, he significantly tapped the breast pocket where he had

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In issues of your paper the Camden Nurseries have advertised Golden Delicious trees. Stark Bro's N. & O. Co. are the introducers and sole owners of the Golden Delicious Apple Tree, and they have brought to our attention their legal rights to that apple tree, and we have agreed not to sell or deliver any Golden Delicious apple trees, and we further agreed not to propagate, raise or sell any of those apple trees. All of our stock of Golden Delicious Apple Trees have been turned over to Stark Bro's, for such disposition as they may care to make of same.

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If you need help, or want to buy or sell, try a small want ad in the American Fruit Growers Magazine. They bring results.

put his supposed copy of the bill of sale, led the way to the door, opened it and bowed out his visitors with various thoughts struggling in them, startled thoughts, thoughts unpleasant to men who loved money. Already Henry Beegoode began to fear that he had made a mistake!

"You'd better not pull any hocus-pocus on me, Get-Rich-Quick Wallingford!" he warned, and then the door was closed, from the inside. From the inside, also, there came a disquietng dual peal of laughter and the tantalizing toot of a saxophone!

BERTRAM BEEGOODE, M. D., in his suite of dignified offices over his father's bank, had as his very first patients the McCabe twins, late of the "On with the Jazz" company, Dottie in blue and Lottie in pink, both fluffy and dainty, and as sweetly redolent as a sun-baked field of new-mown hay. At the first sight of these ungodly persons Dr. Bertram frowned in resentment, then he reminded himself that a healer must know no personalities, so he received the McCabe sisters with due gravity and asked what he might do for them, though coldly.

"I think I've sprained my ankle, doc," explained Dottie, walking with a quite perceptible limp; and she went straight into his consultation room, where she seated herself and looked up at the doctor with charming expectancy.

(To be continued)

What Is Ido?

By Eugene F. McPike

The League of Nations, at its headquarters in Geneva, Switzerland, is giving official consideration to the adoption of an auxiliary language, not to displace any mother tongues, but only to facilitate communication or conversation between those of different nationalities.

This is a problem which has engaged the attention of serious scholars for nearly three hundred years and seems now to be rapidly approaching a final solution. The best and most satisfactory candidate for adoption is the international language IDO, pronounced ee-doh. It is the product of very close and earnest cooperation on the part of eminent linguists, philologists and other men of science, who commenced their labors in 1907. Ido has won the hearty approval of many authorities and organizations in various parts of Europe and elsewhere.

Professor Gilbert Murray, vice-chairman of the executive committee of the League of Nations, during a recent interview in London, said that Ido was easy for Europeans to learn. This is, indeed, very true, because Ido is based upon the correct principle of internationality and, being relatively free from artificial elements, it is essentially natural. It has no accented letters and can, therefore, be set up in type in any printing office. The grammar is simple. The vocabulary is rich and expressive. The sound IDO is euphonious.

The language is altogether practical, because it meets the condition laid down by Professor Otto Jespersen, the eminent philologist of the University of Copenhagen, who said: "That international language is best which is easiest for the greatest number of men."

IDO represents the quintessence of the modern languages of southern and western Europe, but made free from all grammatical complications.

A large number of clubs devoted to IDO, in various parts of the world, are at work, but the followers of IDO are convinced that the problem of an international auxiliary language is qualitative rather than quantitative. That which is intrinsically the best must perforce succeed.

IDO is ready now for use in international correspondence, because its vocabulary is responsive to the needs of modern science, technology, commerce, tourist travel and social relations in general. All progressive people who wish to bring the world to their own doors will find IDO of great practical usefulness.

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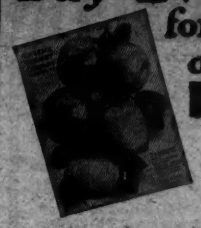

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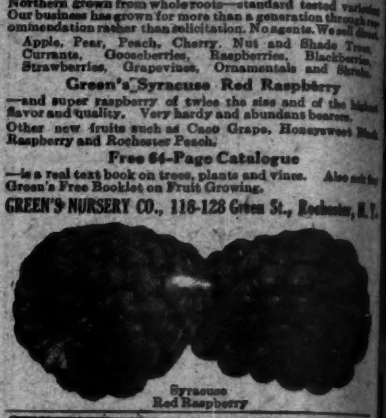

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3831-3695. A Distinctive Style.
The short detachable cape on this pretty model goes well with the wide sleeves and youthful garment lines. Canton crepe would be very attractive for this design, with braiding or embroidery. This is also a good model for taffeta or crepe de meteor combined with georgette.

The waist, 3831, is cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. The skirt in 6 sizes: 24, 26, 28, 30, 32 and 34 inches waist measure. The width of the skirt at the foot is 3¼ yards. To make the dress as illustrated will require 7 yards of 36-inch material.

Two separate patterns required.

3894. Dainty Frock for Girls.
Simplicity combined with the latest style features is pictured here. This model is pretty for net, embroidered voile, crepe de chine and taffeta. The skirt is mounted on a body lining, and the waist is finished separately. Combinations of silk and serge, plaid and plain materials are nice for this.

The Pattern is cut in 4 sizes: 6, 8, 10 and 12 years. A 10-year size requires 3⅛ yards of 32-inch material.

3870. Up-to-Date Simple Frock.
This distinctly youthful frock has the latest fashion "wrinkles." The new sleeve and collars. A choice of high neck or girlish round neck for which the collars are provided. Duvetyn with matched flat braid is here shown. One may have velvet, or taffeta, or serge with braiding. For the round collar, embroidered broad cloth or suede, crepe, or organdy is attractive.

The Pattern is cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. A 38-inch size requires 4 yards of 44-inch material. The width of the skirt at the foot is about 2 yards.

3877. Splendid "Cover All."
Easily made and practical is this apron dress. The deep armseye is one of its several good features. In every sort of household duty it affords protection and convenience. Gingham with piqué for collar and cuffs is nice for this style. Chambrey and organdy, or percale finished with binding in a plain material would also be attractive.

The Pattern is cut in 4 sizes: Small, 34-36; medium, 38-40; large, 42-44; extra large, 46-48 inches bust measure. A medium size requires 6½ yards of 27-inch material.

3885. Popular Romper Suit.
Children usually look happiest when comfortably dressed for play, and surely the bloomer suit has the right lines for comfort and convenience. This model has a pretty pocket and is easy to develop. The rompers may be worn without the smock. Pongee with stitchery is here shown. One could have chambray or pin-checked gingham. The sleeve may be finished in wrist or elbow length.

The Pattern is cut in 4 sizes: 2, 4, 6 and 8 years. A 4-year size requires 2⅞ yards of 32-inch material.

3894. A Popular Style.
Not only for grownups is the "over the skirt" blouse attractive. It is just the right style for the school girl. In this mode it is portrayed with new features. This style may be made with or without the "bosom" front. It also has the new collar, so girlish and pleasing. The skirt is straight and plaited. Prunella, jersey or broad cloth are suitable materials for this dress.

The Pattern is cut in 4 sizes: 10, 12, 14 and 16 years. A 12-year size requires 4⅛ yards of 42-inch material.

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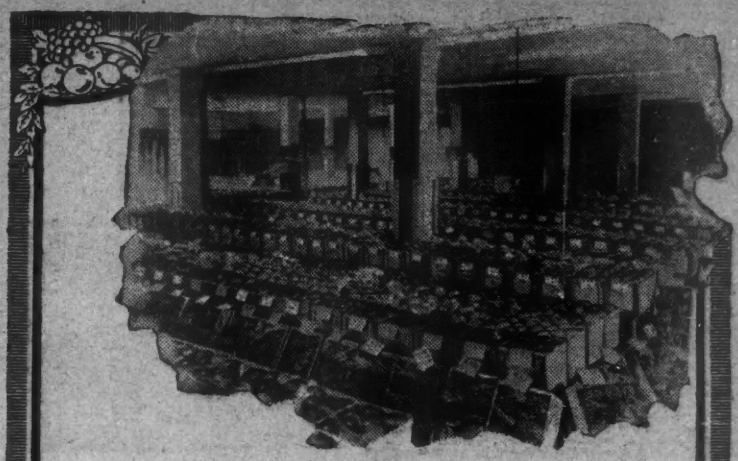

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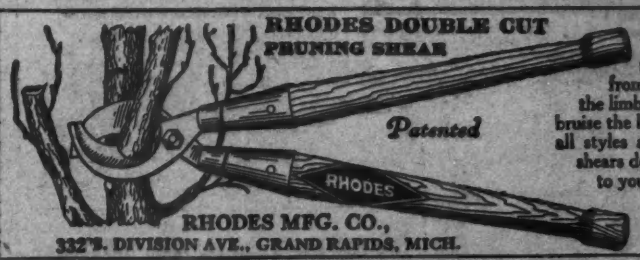

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FORTY-THREE years ago Alexander Graham Bell, the inventor of the telephone, wrote this inspired forecast: "It is conceivable that cables of telephone wires could be laid underground or suspended overhead, communicating by branch wires with private dwellings, country houses, shops, manufactories, etc., and a man in one part of the country may communicate by word of mouth with another in a distant place."
At the right, an old print of Bell lecturing on telephony, 1877.

Foresight

More than forty years ago, when the telephone was still in its experimental stage, with but a few wires strung around Boston, the men back of the undertaking foresaw a universal system of communication that would have its influence upon all phases of our social and commercial life.

They had a plan of organization capable of expansion to meet the growth they foresaw; and their wisdom is borne out by the fact that that plan which they established when telephones were numbered by dozens is efficient now when telephones are numbered by millions.

This foresight has advanced the scientific development of the art of telephony to meet the multiplied public requirements. It has provided for funds essential to the construction of plant; for the purchase of the best materials on the most advantageous terms; for the training of employees to insure skilled operators; for the extension of service in anticipation of growth, with the purpose that no need which can be foreseen and met will find the Bell System unprepared.

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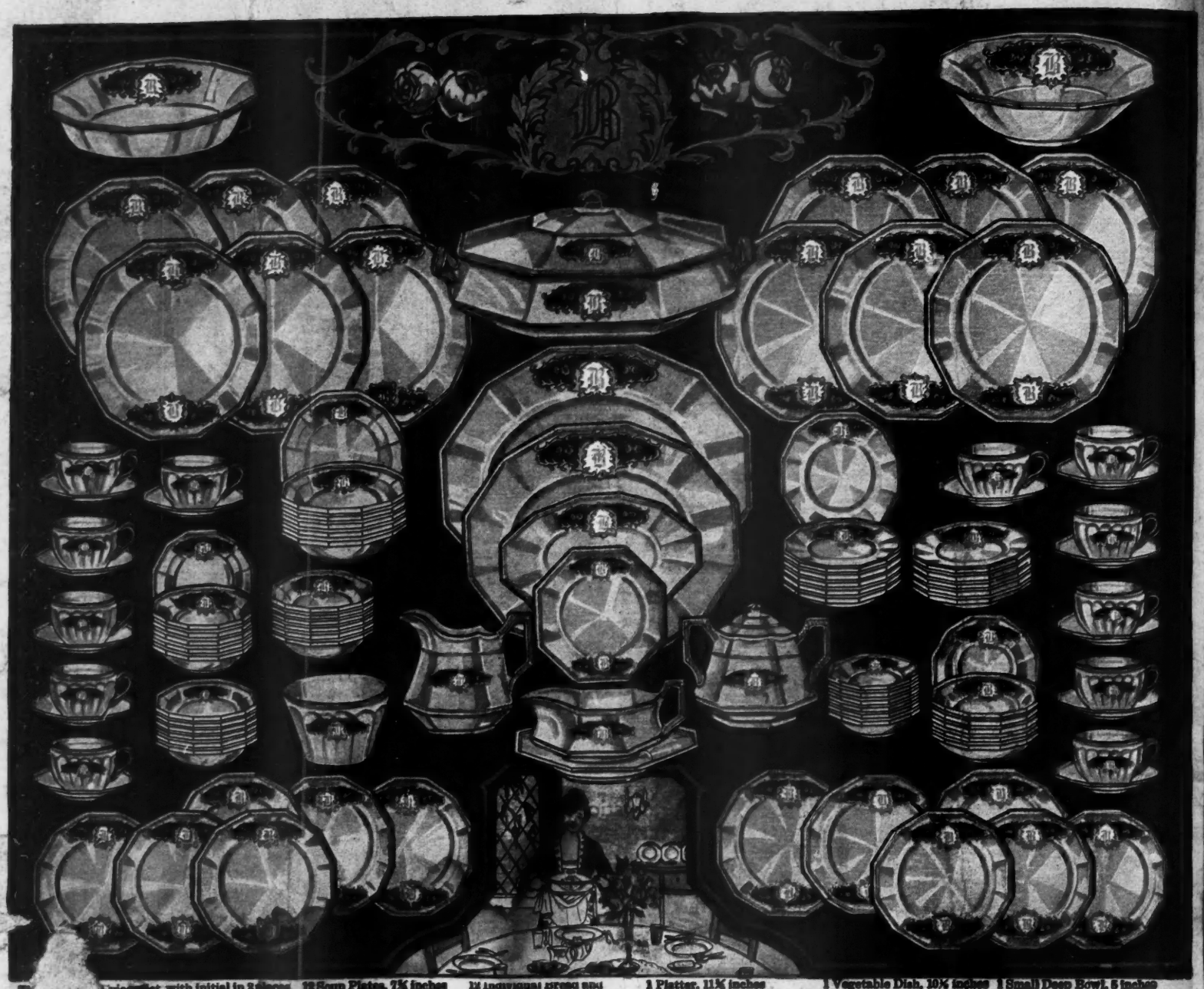

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